



Proposed

**APCD PERMIT TO OPERATE No. 10258  
AND  
PART 70 OPERATING PERMIT No. 10258**

**GREKA OIL AND GAS, INC.  
SOUTH CAT CANYON STATIONARY SOURCE**

**UCB LEASE, CAT CANYON FIELD  
6527 DOMINION ROAD  
SANTA MARIA, CALIFORNIA 93454**

**OPERATOR**

**GREKA OIL AND GAS, INC. ("GREKA")**

**OWNERSHIP**

**GREKA OIL AND GAS, INC. ("GREKA")**

**SANTA BARBARA COUNTY  
AIR POLLUTION CONTROL DISTRICT**

**February 2010**

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## ABBREVIATIONS/ACRONYMS

AP-42	USEPA's <i>Compilation of Emission Factors</i>
APCD	Santa Barbara County Air Pollution Control District
API	American Petroleum Institute
ASTM	American Society for Testing Materials
BACT	Best Available Control Technology
bpd	barrels per day (1 barrel = 42 gallons)
CAM	compliance assurance monitoring
CEMS	continuous emissions monitoring
dscf	dry standard cubic foot
EU	emission unit
°F	degree Fahrenheit
gal	gallon
gr	grain
HAP	hazardous air pollutant (as defined by CAAA, Section 112(b))
H <sub>2</sub> S	hydrogen sulfide
I&M	inspection & maintenance
k	kilo (thousand)
l	liter
lb	pound
lbs/day	pounds per day
lbs/hr	pounds per hour
LACT	Lease Automatic Custody Transfer
LPG	liquid petroleum gas
M	mega (million)
MACT	Maximum Achievable Control Technology
MM	million
MW	molecular weight
NEI	net emissions increase
NG	natural gas
NSPS	New Source Performance Standards
O <sub>2</sub>	oxygen
OCS	outer continental shelf
ppm(vd or w)	parts per million (volume dry or weight)
psia	pounds per square inch absolute
psig	pounds per square inch gauge
PRD	pressure relief device
PTO	Permit to Operate
RACT	Reasonably Available Control Technology
ROC	reactive organic compounds, same as "VOC" as used in this permit
RVP	Reid vapor pressure
scf	standard cubic foot
scfd (or scfm)	standard cubic feet per day (or per minute)
SIP	State Implementation Plan
STP	standard temperature (60°F) and pressure (29.92 inches of mercury)

THC	Total hydrocarbons
tpy, TPY	tons per year
TVP	true vapor pressure
USEPA	United States Environmental Protection Agency
VE	visible emissions
VRS	vapor recovery system

# 1. Introduction

## 1.1 Purpose

1.1.1 General. The Santa Barbara County Air Pollution Control District (APCD) is responsible for implementing all applicable federal, state and local air pollution requirements that affect any stationary source of air pollution in Santa Barbara County. The federal requirements include regulations listed in the Code of Federal Regulations: 40 CFR Parts 50, 51, 52, 55, 61, 63, 68, 70 and 82. The State regulations may be found in the California Health & Safety Code, Division 26, Section 39000 et seq. The applicable local regulations can be found in the APCD's Rules and Regulations. This is a combined permitting action that covers both the Federal Part 70 permit (*Part 70 Operating Permit No. 10258*) as well as the State Operating Permit (*Permit to Operate No. 10258*).

1.1.2 Part 70 Permitting. The initial Part 70 permit for the UCB Lease was issued November 1, 2000 in accordance with the requirements of the APCD's Part 70 operating permit program. This permit is the third renewal of the Part 70 permit, and may include additional applicable requirements. UCB Lease facility (FID 4126) is a part of the *Greka South Cat Canyon* stationary source (SSID = 2658), which is a major source for NO<sub>x</sub> and CO. Conditions listed in this permit are based on federal, state or local rules and requirements. Sections 9.A, 9.B and 9.C of this permit are enforceable by the APCD, the USEPA and the public since these sections are federally enforceable under Part 70. Where any reference contained in Sections 9.A, 9.B or 9.C refers to any other part of this permit, that part of the permit referred to is federally enforceable. Conditions listed in Section 9.D are "APCD-only" enforceable.

Pursuant to the stated aims of Title V of the CAAA of 1990 (i.e., the Part 70 operating permit program), this permit has been designed to meet two objectives. First, compliance with all conditions in this permit would ensure compliance with all federally-enforceable requirements for the facility. Next, the permit would be a comprehensive document to be used as a reference by the permittee, the regulatory agencies and the public to assess compliance.

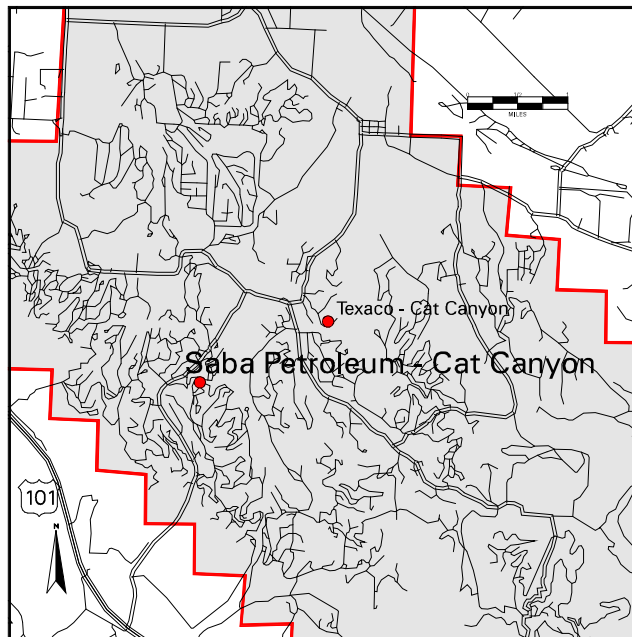
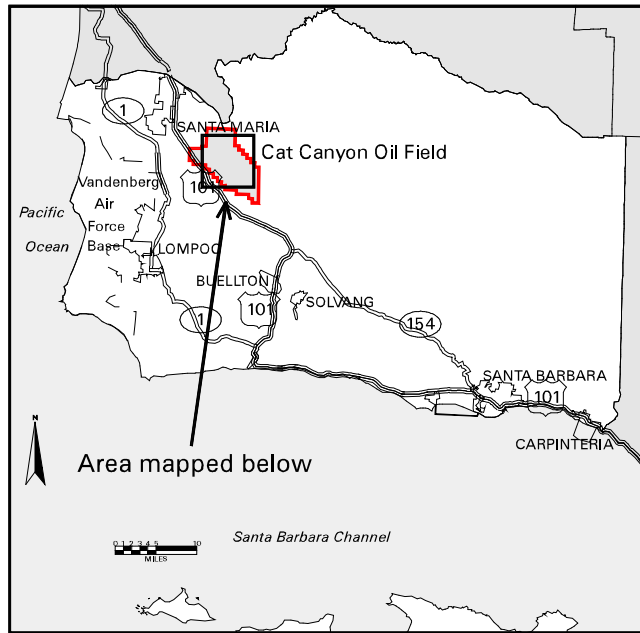
## 1.2 Facility Overview

1.2.1 Facility Overview: Greka Oil and Gas, Inc. ("Greka") is the owner and operator of UCB Lease, located at 6527 Dominion Road, Santa Maria, California 93454. The facility is located in the Cat Canyon Oil Field, approximately two miles south of the Palmer Road and Cat Canyon Road intersection and six miles south-southeast of the city of Santa Maria in Santa Barbara County. For APCD regulatory purposes, the facility location is in the Northern Zone of Santa Barbara County<sup>1</sup>. Figure 1.1 shows the relative location of the facility within the county.

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<sup>1</sup> APCD Rule 102, Definition: "Northern Zone"

**Figure 1.1 Location Map for Greka Cat Canyon**



UCB (*also known as United California Bank*) Lease was operational in September 1976 when its owner/operator Sun Oil of Delaware applied to the APCD for its first operating permits (PTO's 1713 through 1727). An operating permit was issued to Sun Oil by the APCD in October 1976. In March 1983, Sun Oil sold the lease to Brayton Oil *d.b.a.* Dominion Oil of California. In December 1996, some of the oil wells at the lease were sold to Oilwell Technologies and Enhancement Corporation (OTEC). Horizontal Ventures Incorporated (HVI) bought the entire lease from Dominion Oil and OTEC in November 21, 1997; the ownership was transferred on December 19, 1997. In January 2000, Santa Maria Refining bought the lease from HVI. Greka assumed sole ownership operator of the facility resulting in the facility becoming part of the Greka Cat Canyon stationary source.

Oil, water, and gas are produced from six (6) wells located on the lease. As described below in Section 2.1, the entire production is piped to a tank battery where gas, oil, water and sand are separated. The gas collected is scrubbed and sent to Bell Lease for processing. The oil is cleaned and sent to shipping tanks and then to tanker trucks via a loading rack. The average gravity of the produced crude oil in 1998 was 12° API. As of the date of final issuance of this permit (PTO 10258 R3), with the exception of the wells, all the equipment at this facility is idle.

Stationary Source Overview: Prior to August 2002, the Greka Cat Canyon Stationary Source was a Part 70 source consisting of the Bell, Dominion, UCB, Blockman, Palmer-Stendl and an IC engines facility. In August 2002 Greka purchased nine leases within the Cat Canyon field from Vintage Petroleum which were incorporated into the existing Greka Pt70 Cat Canyon Stationary Source at that time. In November 2008, Greka sold two of the leases within the stationary source; the California lease and United California lease. As a result of this sale, the stationary source configuration was reorganized based on the stationary source definition in APCD Rule 201. The single source was split into the following three sources: the North Cat Canyon Stationary Source consisting of the Goodwin, Harbordt, Lloyd, Mortenson, and Security/Thomas leases; the Central Cat Canyon Stationary Source consisting of the Porter lease and the South Cat Canyon Stationary Source consisting of the Bell, Blockman, Dominion, Palmer-Stendl, UCB and the IC Engines leases. Following this reorganization, only the South Cat Canyon Stationary Source (SSID = 2658) remained a Part 70 source.

Oil and gas well production at the Greka South Cat Canyon stationary source, is produced by wells at the Blockman, Dominion, Palmer-Stendl and UCB leases and is piped to the central processing facility at the Bell Lease. The crude oil processed at the Bell lease is sent off-site via pipelines or tanker trucks. Gas production from these wells is processed at the Bell lease and used by the boilers and heater treaters at the Bell lease, by the field combustion equipment throughout the Greka Cat Canyon leases, or piped to locations offsite.

The UCB Lease consists of the following systems:

- Oil & Gas Production wells and surface system
- Oil, water and gas separation system
- Oil and water storage system
- Oil shipping system

- Produced water (waste water) injection system
- Gas scrubber system
- Vapor Recovery system (VRS)
- Operations support systems including electrical & safety systems

A number of crude oil pumping and wastewater injection equipment at UCB Lease are powered by stationary, field-gas-fired IC engines. Operation of these IC engines and their emissions are addressed by the APCD in a separate Part 70 permit 8036. The pump/ww-injector drive units may be electrified after notification to the APCD. With the exception of the wells, all processing equipment at this facility is idle.

1.2.2 Facility New Source Review Overview: Since July 1979, the following permit actions have been issued:

*ATC/PTO 4729:* Sun Oil obtained an Authority to Construct (ATC 4729) on June 7, 1982 to reduce its tank battery (i.e., two tanks) size from 1,000 barrels each tank to 500 barrels each tank. PTO 4729 was issued on June 18, 1982.

*ATC/PTO 6136:* Dominion Oil obtained an Authority to Construct (ATC 6136) on April 25, 1985 to install a 1.5 MMBtu/hour heater treater at UCB lease. The ATC was followed by PTO 6136 issued in May, 1985.

*ATC/PTO 6677:* Dominion Oil obtained an Authority to Construct (ATC 6677) on February 19, 1986 to increase its tank battery (i.e., two tanks) size from 500 barrels each to 1,000 barrels each and to add one well and a vapor recovery system (VRS) to the facility. A final PTO 6677 was issued on April 3, 1986.

*ATC 10174:* HVI obtained an Authority to Construct (ATC 10174) on July 29, 1999 to operate two Baker tanks and associated oil loading racks at the UCB or Dominion leases. Since these two leases are now part of Greka Cat Canyon stationary source, the Baker tanks are now allowed to operate anywhere within the Greka Cat Canyon stationary source.

*TRN/OO Letter:* Brayton Oil doing business as Dominion Oil applied for ownership transfer of UCB Lease from Sun Oil on March 13, 1983. The transfer was granted on March 16, 1983.

*TRN/OO 8342:* Oilwell Technologies and Enhancement Corporation (OTEC) purchased ownership of one well at UCB Lease from Dominion Oil in November 1996. The ownership transfer was accepted by the APCD on December 17, 1996.

*TRN/OO 9734-01:* Horizontal Ventures Inc. (HVI) bought out the entire UCB Lease from Dominion Oil and OTEC on November 21, 1997. The ownership transfer was accepted by the APCD on December 19, 1997.

*TRN/OO 9668:* Santa Maria Refining purchased ownership of the UCB Lease from HVI. The APCD document TRN/OO 9668-01 was issued on February 8<sup>th</sup>, 2000.

*ATC 9884:* Greka obtained an Authority to Construct (ATC 9884) in May 1998 to install an oil loading rack at Dominion Lease and to increase the facility production rate to 500 bpd oil. The PTO application, submitted in July 2000 does not address any unit at UCB lease.

*PTO 10258-01:* The permit action documented and permitted one well that was discovered to exist at this lease but inadvertently omitted during original permitting of this facility. A final permit was issued September 1, 2005.

### **1.3 Emission Sources**

Air pollution emissions from the UCB Lease are the result of oil and gas wells, shipping tanks, combustion sources, sumps and well cellars, scrubber, loading rack, and oil & gas piping components, such as valves and flanges. Section 4 of the permit provides the APCD's engineering analysis of these emission sources. Section 5 of the permit describes the allowable emissions from each permitted emissions unit and the entire UCB Lease facility. It also lists the potential emissions from non-permitted emission units. The emission sources include:

1. Oil and gas wells (6)
2. Crude oil shipping tanks (2) and portable Baker tanks (2)
3. Field gas-fired heater treaters (2) and boiler (1)
4. Free water knockout vessel/de-sander, heated by field gas-fired heater
5. Waste water sumps (2) and well cellars (3)
6. Hydrogen Sulfide scrubber (1)
7. Grade level oil loading rack
8. Fugitive emission components

A list of all permitted equipment is provided in Section 10.5.

### **1.4 Emission Control Overview**

Air quality emission controls are utilized on UCB Lease for a number of emission units to reduce air pollution emissions. Additionally, the use of utility grid power allows UCB Lease to operate a number of electrically driven pumps and compressors on site. The emission controls employed at the facility include:

- Use of scrubber units to reduce the hydrogen sulfide content of the field gas to levels well below 796 ppmv (*Rule 311*); also facilitates compliance with Rules 303 and 310.
- Use of vapor recovery units, which effectively reduce ROC emissions from crude oil and waste water tanks by more than 90 percent.
- A Fugitive Hydrocarbon Inspection & Maintenance (I&M) program for detecting and repairing leaks of hydrocarbons from piping components, consistent with the requirements of Rule 331, to reduce ROC emissions by approximately 80 percent.
- A monitoring and maintenance program for well cellars, consistent with the requirements of Rule 344, to reduce ROC emissions by approximately 70 percent.

## **1.5 Offsets/Emission Reduction Credit Overview**

Operation of equipment listed in this permit does not require emission offsets nor does it provide emission reduction credits (ERC). This stationary source does not exceed APCD Rule 802 offset thresholds for any pollutant.

## **1.6 Part 70 Operating Permit Overview**

- 1.6.1 Federally-enforceable Requirements: All federally enforceable requirements are listed in 40 CFR Part 70.2 (*Definitions*) under “applicable requirements.” These include all SIP-approved APCD Rules, all conditions in the APCD-issued Authority to Construct permits, and all conditions applicable to major sources under federally promulgated rules and regulations. All these requirements are enforceable by the public under CAAA. (*see Tables 3.1 and 3.2 for a list of federally enforceable requirements*)
- 1.6.2 Insignificant Emissions Units: Insignificant emission units are defined under APCD Rule 1301 as any regulated air pollutant emitted from the unit, excluding HAPs, that are less than 2 tons per year based on the unit’s potential to emit and any HAP regulated under section 112(g) of the Clean Air Act that does not exceed 0.5 ton per year based on the unit’s potential to emit. Insignificant activities must be listed in the Part 70 application with supporting calculations. Applicable requirements may apply to insignificant units. There are no insignificant emission units associated with this facility.
- 1.6.3 Federal Potential to Emit: The federal potential to emit (PTE) of a stationary source does not include fugitive emissions of any pollutant, unless the source is: (1) subject to a federal NSPS/NESHAP requirement, or (2) included in the 29-category source list specified in 40 CFR 51.166 or 52.21. The federal PTE does include all emissions from any insignificant emissions units. (*See Section 5.4 for the federal PTE for this source*)
- 1.6.4 Permit Shield: The operator of a major source may be granted a shield: (a) specifically stipulating any federally-enforceable conditions that are no longer applicable to the source and (b) stating the reasons for such non-applicability. The permit shield must be based on a request from the source and its detailed review by the APCD. Permit shields cannot be indiscriminately granted with respect to all federal requirements. Greka has not made a request for a permit shield.
- 1.6.5 Alternate Operating Scenarios: A major source may be permitted to operate under different operating scenarios, if appropriate descriptions of such scenarios are included in its Part 70 permit application and if such operations are allowed under federally-enforceable rules. Greka made no request for permitted alternative operating scenarios.
- 1.6.6 Compliance Certification: Part 70 permit holders must certify compliance with all applicable federally-enforceable requirements including permit conditions. Such certification must accompany each Part 70 permit application; and, be re-submitted annually on or before March 1<sup>st</sup> or on a more frequent schedule specified in the permit. Each certification is signed by a “responsible official” of the owner/operator company whose name and address is listed prominently in the Part 70 permit. (*see Section 1.6.9 below*)

- 1.6.7 Permit Reopening: Part 70 permits are re-opened and revised if the source becomes subject to a new rule or new permit conditions are necessary to ensure compliance with existing rules. The permits are also re-opened if they contain a material mistake or the emission limitations or other conditions are based on inaccurate permit application data.
- 1.6.8 Hazardous Air Pollutants (HAPs): Part 70 permits also regulate emission of HAPs from major sources through the imposition of maximum achievable control technology (MACT), where applicable. The federal PTE for HAP emissions from a source is computed to determine MACT or any other rule applicability. However, based on CAAA, Section 112 (n) (4) stipulations, HAP emissions from any equipment at this facility cannot be aggregated with HAP emissions from other units at the facility; hence, HAPs, including any lease-wide emissions computations, are not addressed in this permit (*see Sections Part 70 Engineering Review: Hazardous Air Pollutant Emissions and 5.5*).
- 1.6.9 Responsible Official: The designated responsible official and their mailing address is:
- Ms. Susan Whalen, Vice-president  
Greka Oil and Gas, Inc.  
6527 Dominion Road  
Santa Maria, California 93454

## **2. Process Description**

### **2.1 Summary**

- Process Summary: Pumps inject diluent into the wells to improve the oil viscosity. The system directs well casing gas into the gas collection system (GCS). Gross crude oil production is routed to the tank battery where gas, oil, water, and sand are separated. Pipelines move the separated fluids into wastewater sumps, a heater treater and/or a test treater. Clean oil from the heater treater is placed into heated shipping tanks. The dry oil (BSW <3%) is transferred from the shipping tanks to a loading rack. The gas is scrubbed and collected in the GCS and sent to Bell Lease for processing. Wastewater is injected into wastewater wells.
- 2.1.1 *Production*: UCB Lease operates six (6) oil and gas production wells. Only three of the wells are equipped with cellars. The production wells are not free flowing; artificial lift pumps have been installed in all wells to assist in production. UCB Lease has a permitted production rate of 150 bpd of dry oil.
- 2.1.2 *Gas, Oil, and Water Separation*: Fluid from the production wells is a mixture of oil, gas, sand and water. Separation of the solid, liquid and gas streams is accomplished in the free water knock out vessel/de-sander, a separator vessel functionally. The vessel is heated by field gas combustion to facilitate gas separation from oil. This heater has a heat input rate of 1.0 MMBtu/hour.

The free water knock out/de-sander is designed to cause any liquid droplets in the gas stream to drop out. Gas from the vessel is routed to the gas collection system. Oil and water separation in the free water knockout takes place by gravity separation. The water cut of the crude oil leaving the free water knockout is controlled. Produced water from the free water knockout flows to waste water sumps

- 2.1.3 *Waste Water Treatment:* Two waste water sumps, one with 1,444 barrels capacity and the other with 541 barrels capacity, service the facility (*secondary and tertiary service, respectively*). Wastewater from the second sump is injected into waste water wells using injector pumps or pipelined off the property. A 10 hp, electrically driven skim pump periodically routs any oil at the sumps to the free water knockout vessel.
- 2.1.4 *Crude Oil Cleaning and Storage:* Oil from the free water knock out/de-sander vessel is sent to a heater treater and/or a test treater. The 1.5 MMBtu/hour heater treater and the 0.6 MMBtu/hour test treater are both fired by field gas. Any gas produced at the treaters is routed to the gas collection system. Clean oil from the treaters is transferred to the heated shipping tanks. Two 500 barrel portable Baker tanks are also used occasionally at the lease to store crude oil. Both tanks are connected to the vapor recovery system when they are in use; and can be moved around the stationary source.
- 2.1.5 *Shipping Tanks:* Two 1,000 barrel capacity shipping tanks are used to receive oil from the heater treaters. These tanks are steam heated and equipped with pressure vacuum relief valves with a pressure setting range of 0.11 psig. Both tanks are connected to the vapor recovery system.
- 2.1.6 *Loading Racks:* A grade level loading rack receives heated oil from the shipping tanks for loading into highway tanker trucks using gravity feed. The rack is equipped with one (1) nozzle and is connected to the lease's vapor recovery system. The allowable peak daily truck loading of oil at the rack is 2,000 barrels per day. Two portable loading racks service the two Baker tanks. The allowable peak daily loading for each of these racks is 500 barrels. The racks are connected to the vapor recovery system whenever they are in use.
- 2.1.7 *Fuel Gas Scrubbing:* A fuel gas scrubber scrubs field gas used for combustion at the lease. Any fuel gas sweetening is performed at the adjacent Dominion Lease, using H<sub>2</sub>S scrubbers.
- 2.1.8 *Vapor Recovery System:* A 10 hp, electrically driven compressor powers the vapor recovery system. The VRS collects vapor from the two crude oil shipping tanks and the loading rack at UCB lease as well as the loading rack at Dominion Lease with a control efficiency of 95 percent.

## **2.2 Support Systems**

- 2.2.1 *Piping and Pipeline Components:* A number of valves, fittings and flanges are used in the pipelines which transport petroleum fluids and process streams. These components emit fugitive hydrocarbons that are regulated via an inspection and maintenance program at the facility.

- 2.2.2 *Steam Generation*: A 0.6 MMBtu/hour boiler provides hot water to heat the crude oil in the two shipping tanks.

### **2.3 Maintenance/Degreasing Activities**

- 2.3.1 *Paints and Coatings*: Maintenance painting at the lease is conducted on an intermittent basis. Normally only touchup and equipment labeling or tagging is done with cans of spray paint.
- 2.3.2 *Solvent Usage*: Solvents not used for surface coating thinning may be used at the lease for daily operations. Usage may include cold solvent degreasing and wipe cleaning with rags.

### **2.4 Planned Process Turnarounds**

Major pieces of equipment such as IC engines serving the oil well pumps or the injector pumps undergo maintenance as specified by the manufacturer. Maintenance of fugitive emissions critical components is carried out according to the requirements of Rule 331 {*Fugitive Emissions Inspection and Maintenance*}.

### **2.5 Other Processes**

Greka has stated in its Part 70 application that no other processes exist that would be subject to permit.

### **2.6 Detailed Process Equipment Listing**

Refer to Attachment 10.5 for the Equipment List.

## **3. Regulatory Review**

This Section identifies the federal, state and local rules and regulations applicable to UCB Lease.

### **3.1 Rule Exemptions Claimed**

- ⇒ APCD Rule 202 (*Exemptions to Rule 201*): Greka has not requested any permit exemptions under this rule.
- *Note for De Minimis Exemption*. In a letter dated May 21, 1998, Greka (Dominion Oil) informed the APCD that **no de minimis** increase of emissions for the UCB Lease has occurred since 15 November 1990. Thus, the *de minimis* emissions at the lease remain zero.
- ⇒ APCD Rule 342 (*Control of Oxides of Nitrogen from Boilers, Steam Generators and Process Heaters*): The following exemptions from this Rule are approved by the APCD:
- the boiler with 0.6 MMBtu/hour heat input
  - the two heater treaters with 1.5 and 0.6 MMBtu/hr heat inputs, respectively
  - the free water knockout vessel/de-sander unit with 1.0 MMBtu/hour heat input
- ⇒ APCD Rule 344 (*Petroleum Sumps, Pits and Well Cellars*): The following exemption is approved by the APCD:

- Section B.4 allows the 900-sq. ft. sump and the 300-sq. ft. sump to be exempt from Rule 344 based on their surface areas being less than 1,000 sq. ft.

### **3.2 Compliance with Applicable Federal Rules and Regulations**

- 3.2.1 40 CFR Parts 51/52 [New Source Review (Nonattainment Area Review and Prevention of Significant Deterioration)]: UCB Lease was constructed and permitted prior to the applicability of these regulations. However, all permit modifications as of July, 1979 are subject to APCD NSR requirements. Compliance with APCD Regulation VIII (*New Source Review*), ensures that future modifications to the facility will comply with these regulations.
- 3.2.2 40 CFR Part 60 [New Source Performance Standards]: None of the equipment in this permit are subject NSPS requirements.
- 3.2.3 40 CFR Part 61 [NESHAP]: None of the equipment in this permit are subject NESHAP requirements.
- 3.2.4 40 CFR Part 63 [MACT]: This facility is not currently subject to the provisions of this Subpart. On June 17, 1999, EPA promulgated Subpart HH, a National Emission Standards for Hazardous Air Pollutants (NESHAPS) for Oil and Natural Gas Production and Natural Gas Transmission and Storage. Pursuant to this promulgation, Greka submitted information in June 2000 and supporting information in July 2000 indicating that the Bell, Blockman, Dominion, Palmer-Stendl, and UCB leases were exempt from the requirements of this MACT based on its black oil production. The MACT exemption holds for the South Cat Canyon stationary source, since black oil is produced at each of the leases comprising the source. The Greka South Cat Canyon stationary source is subject to general recordkeeping requirements as defined in condition 9.B.14.
- 3.2.5 40 CFR Part 63 [MACT Standards]: On August 27, 2003, EPA promulgated Subpart EEEE, a National Emission Standards for Hazardous Air Pollutants (NESHAPS) for Organic Liquids Distribution (Non-Gasoline). The District has determined that none of the permitted facilities within the South Cat Canyon stationary source are subject to this MACT.
- 3.2.6 40 CFR Part 63 [Proposed MACT Standards]: On September 13, 2004, EPA promulgated Subpart DDDDD, a National Emission Standards for Hazardous Air Pollutants (NESHAPS) for Industrial, Commercial, and Institutional Boilers and Process Heaters. Greka has existing small, gaseous fueled heaters (under 10 MMBtu/hr) at this facility, however, the subpart does not specify any emission limits or work practice standards for this class of units. Thus, no DDDDD requirements apply.
- 3.2.7 40 CFR Part 64 [Compliance Assurance Monitoring]: This rule became effective on April 22, 1998 and affects emission units at the source subject to a federally enforceable emission limit or standard that use a control device to comply with the emission standard, and either pre-control or post-control emissions exceed the Part 70 source emission thresholds (currently 100 TPY for any pollutant). Compliance with this rule was evaluated and it was determined that no emission units at this facility are currently subject to CAM.

- 3.2.8 40 CFR Part 70 {Operating Permits}: This Subpart is applicable to UCB Lease. Table 3.4-1 lists the federally-enforceable APCD promulgated rules that are “generic” and apply to UCB Lease. Table 3.4-2 lists the federally-enforceable APCD promulgated rules that are “unit-specific”. These tables are based on data available from the APCD’s administrative files and from Greka’s Part 70 Operating Permit renewal application submitted July 200. Table 3.4-4 includes the adoption dates of these rules.

In its Part 70 renewal permit application submitted in July 2009, Greka certified compliance with all existing APCD rules and permit conditions. This certification is also required of Greka semi-annually. Issuance of this permit and compliance with all its terms and conditions will ensure that Greka complies with the provisions of all applicable Subparts.

### **3.3 Compliance with Applicable State Rules and Regulations**

- 3.3.1 Division 26. Air Resources {California Health & Safety Code}: The administrative provisions of the Health & Safety Code apply to this facility and will be enforced by the APCD. These provisions are APCD-enforceable only.
- 3.3.2 California Administrative Code Title 17: These sections specify the standards by which abrasive blasting activities are governed throughout the State. All abrasive blasting activities at UCB Lease are required to conform to these standards. Compliance will be assessed through onsite inspections. These standards are APCD-enforceable only. However, CAC Title 17 does not preempt enforcement of any SIP-approved rule that may be applicable to abrasive blasting activities.

### **3.4 Compliance with Applicable Local Rules and Regulations**

- 3.4.1 Applicability Tables: In addition to Table 3.4-1 and Table 3.4-2, Table 3.4-3 lists the non-federally enforceable APCD promulgated rules that apply to UCB Lease. Table 3.4-4 lists the adoption date of all rules applicable to this permit at the date of this permit’s issuance.
- 3.4.2 Rules Requiring Further Discussion: This section provides a more detailed discussion regarding the applicability and compliance of certain rules.

The following is a rule-by-rule evaluation of compliance for UCB Lease:

*Rule 301 - Circumvention*: This rule prohibits the concealment of any activity that would otherwise constitute a violation of Division 26 (Air Resources) of the California H&SC and the SBCAPCD rules and regulations. To the best of the District's knowledge, Greka is operating in compliance with this rule.

*Rule 302 - Visible Emissions*: This rule prohibits the discharge from any single source any air contaminants for which a period or periods aggregating more than three minutes in any one hour which is as dark or darker in shade than a reading of 1 on the Ringelmann Chart or of such opacity to obscure an observer's view to a degree equal to or greater than a reading of 1 on the Ringelmann Chart. Emission units subject to this rule include the internal combustion engines, the boiler and the heater treater(s) on the lease. Compliance will be assured by

requiring all combustion equipment to be maintained according to manufacturer maintenance schedules.

*Rule 303 - Nuisance:* This rule prohibits Greka from causing a public nuisance due to the discharge of air contaminants. Based on the lease's location, the potential for public nuisance is small.

*Rule 304 - Particulate Matter, Northern Zone:* UCB Lease is considered a Northern Zone source. This rule prohibits the discharge into the atmosphere from any source particulate matter in excess of 0.3 gr/scf. Emission units subject to this rule include the internal combustion engines, the boiler and the heater treater(s) on the lease. Compliance will be assured by requiring all combustion equipment to be maintained according to manufacturer maintenance schedules.

*Rule 309 - Specific Contaminants:* Under Section "A", no source may discharge sulfur compounds and combustion contaminants in excess of 0.2 percent as SO<sub>2</sub> (by volume) and 0.3 gr/scf (at 12% CO<sub>2</sub>) respectively. Sulfur emissions due to combustion of field gas containing no more than 796 ppmv H<sub>2</sub>S will comply with the SO<sub>2</sub> limit. All combustion equipment items have the potential to exceed the combustion contaminant limit if not properly maintained (see discussion on Rule 304 above for compliance).

*Rule 310 - Odorous Organic Compounds:* This rule prohibits the discharge of H<sub>2</sub>S and organic sulfides that result in a ground level impact beyond the property boundary in excess of either 0.06 ppmv averaged over 3 minutes and 0.03 ppmv averaged over 1 hour. No measured data exists to confirm compliance with this rule, however, all produced gas from UCB Lease is scrubbed. As a result, it is expected that compliance with this rule will be achieved.

*Rule 311 - Sulfur Content of Fuels:* This rule limits the sulfur content of fuels combusted on UCB Lease to 0.5 percent (by weight) for liquid fuels and 50 gr/100 scf (calculated as H<sub>2</sub>S) {or 796 ppmvd} for gaseous fuels. All combustion equipment on the lease are expected to be in compliance with the gaseous fuel limit as determined by fuel (field gas) analysis documentation. The APCD requires Greka to submit a Fuel Gas Sulfur and HHV Monitoring Plan to sampling locations and procedures for combustion units permitted on the Greka Cat Canyon stationary source.

*Rule 317 - Organic Solvents:* This rule sets specific prohibitions against the discharge of emissions of both photochemically and non-photochemically reactive organic solvents (40 lb./day and 3,000 lb/day respectively). Solvents may be used on the lease during normal operations for degreasing by wipe cleaning and for use in paints and coatings in maintenance operations. There is the potential to exceed the limits under Section B.2 during significant surface coating activities. Greka is required to maintain records to ensure compliance with this rule.

*Rule 322 - Metal Surface Coating Thinner and Reducer:* This rule prohibits the use of photochemically reactive solvents for use as thinners or reducers in metal surface coatings.

Greka will be required to maintain records during maintenance operations to ensure compliance with this rule.

*Rule 323 - Architectural Coatings:* This rule sets standards for the application of surface coatings. The primary coating standard that will apply to the lease is for Industrial Maintenance Coatings that have a limit of 340 gram ROC per liter of coating, as applied. Greka is required to comply with the administrative requirements under Section F of the Rule for each container on the lease.

*Rule 324 - Disposal and Evaporation of Solvents:* This rule prohibits any source from disposing more than one and a half gallons of any photochemically reactive solvent per day by means that will allow the evaporation of the solvent into the atmosphere. Greka is required to maintain records to ensure compliance with this rule.

*Rule 325 - Crude Oil Production and Separation:* This rule, adopted January 25, 1994, applies to equipment used in the production, gathering, storage, processing and separation of crude oil and gas prior to custody transfer. The primary requirements of this rule are under Sections D and E. Section D requires the use of vapor recovery systems on all tanks and vessels, including waste water tanks, oil/water separators and sumps. Section E requires that all produced gas be controlled at all times, except for wells undergoing routine maintenance. Greka has installed a vapor recovery system (VRS) on all equipment subject to this rule. All vessels and tanks and relief valves are connected to the VRS via the GCS. Compliance with Section E is met by TVP analysis and by directing all scrubbed produced gas to the GCS and from there to the off-site pipeline. Compliance with this rule will also be verified by District inspections.

*Rule 330 - Surface Coating of Metal Parts and Products:* This rule sets standards for many types of coatings applied to metal parts and products. In addition to the ROC standards, this rule sets operating standards for application of the coatings, labeling and record-keeping.

*Rule 331 - Fugitive Emissions Inspection and Maintenance:* This rule applies to components in liquid and gaseous hydrocarbon service at oil and gas production fields. Ongoing compliance with the provisions of this rule will be assessed via the APCD-approved Fugitive I&M Plan (March 2005), facility inspection by APCD personnel using an organic vapor analyzer and analysis of operator records.

*Rule 333 - Control of Emissions from Reciprocating Internal Combustion Engines:* This rule applies to all engines with a rated brake horsepower of 50 or greater that are fueled by liquid or gaseous fuels. Compliance of the IC engines operating on UCB lease with this Rule is discussed in the Greka Cat Canyon IC Engines PTO 8036.

*Rule 342 - Control of Oxides of Nitrogen from Boilers, Steam Generators and Process Heaters:* This rule sets emission standards for external combustion units with a rated heat input greater than 5.0 MMBtu/hr. UCB Lease emission units (heater treaters etc.) are not subject to this rule.

*Rule 343 - Petroleum Storage Tank Degassing:* This rule applies to the degassing of any above-ground tank, reservoir or other container of more than 40,000 gallons capacity containing any organic liquid with a vapor pressure greater than 2.6 psia or between 20,000 gallons and 40,000 gallons capacity containing any organic liquid with a vapor pressure greater than 3.9 psia. *UCB Lease crude oil tanks are potentially subject to this rule, and are required to comply with this Rule, if the Rule is applicable to these units.* Greka submitted a revised degassing plan in April 2004 which was approved by the APCD.

*Rule 344 - Petroleum Sumps, Pits and Well Cellars:* This rule applies to petroleum sumps, pits and well cellars provided such sources have output exceeding 150 barrels per day. Post-primary sumps less than 1,000 square feet surface area at petroleum production sources are exempt from the Rule. The UCB Lease sumps do not exceed these thresholds; thus, these are not subject to this rule.

*Rule 346 - Loading of Organic Liquids:* This rule applies to the transfer of organic liquids into an organic liquid cargo vessel. For this rule only, an organic liquid cargo vessel is defined as a truck, trailer or railroad car. Compliance with this rule will be ensured by TVP analysis as described in Section H. Compliance with this Rule is ensured based on on-site inspections.

*Rule 353 - Adhesives and Sealants:* This rule applies to the use of adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers or any other primers. Compliance with this rule is met through appropriate record keeping of adhesive and sealant materials used. Also, exclusive use of adhesive and sealant contained in containers of 16 fluid ounces or less demonstrate compliance with this rule.

*Rule 505 - Breakdown Conditions:* This rule describes the procedures that Greka must follow when a breakdown condition occurs to any emissions unit associated with UCB Lease.

A breakdown condition is defined as an unforeseeable failure or malfunction of (1) any air pollution control equipment or related operating equipment which causes a violation of an emission limitation or restriction prescribed in the District Rules and Regulations, or by State law, or (2) any in-stack continuous monitoring equipment, provided such failure or malfunction:

- a. Is not the result of neglect or disregard of any air pollution control law or rule or regulation;
- b. Is not the result of an intentional or negligent act or omission on the part of the owner or operator;
- c. Is not the result of improper maintenance;
- d. Does not constitute a nuisance as defined in Section 41700 of the Health and Safety Code;
- e. Is not a recurrent breakdown of the same equipment.

*Rule 603 - Emergency Episode Plans:* Section "A" of this rule requires the submittal of *Stationary Source Curtailment Plan* for all stationary sources that can be expected to emit

more than 100 tons per year of hydrocarbons, nitrogen oxides, carbon monoxide or particulate matter. A revised plan was submitted and approved by the APCD in April 2004.

**Table 3.4-1 Generic Federally-Enforceable APCD Rules**

<b>Generic Requirements</b>	<b>Affected Emission Units</b>	<b>Basis for Applicability</b>
<u>RULE 101</u> : Compliance by Existing Installations	All emission units	Emission of pollutants
<u>RULE 102</u> : Definitions	All emission units	Emission of pollutants
<u>RULE 103</u> : Severability	All emission units	Emission of pollutants
<u>RULE 201</u> : Permits Required	All emission units	Emission of pollutants
<u>RULE 202</u> : Exemptions to Rule 201	Applicable emission units, as listed in form 1302-H of the Part 70 application	Insignificant activities/emissions, per size/rating/function
<u>RULE 203</u> : Transfer	All emission units	Change of ownership
<u>RULE 204</u> : Applications	All emission units	Addition of new equipment of modification to existing equipment.
<u>RULE 205</u> : Standards for Granting Permits	All emission units	Emission of pollutants
<u>RULE 206</u> : Conditional Approval of Authority to Construct or Permit to Operate	All emission units	Applicability of relevant Rules
<u>RULE 207</u> : Denial of Applications	All emission units	Applicability of relevant Rules
<u>RULE 208</u> : Action on Applications – Time Limits	All emission units. Not applicable to Part 70 permit applications.	Addition of new equipment or modification to existing equipment.
<u>RULE 212</u> : Emission Statements	All emission units	Administrative
<u>RULE 301</u> : Circumvention	All emission units	Any pollutant emission
<u>RULE 302</u> : Visible Emissions	All emission units	Particulate matter emissions
<u>RULE 303</u> : Nuisance	All emission units	Emissions that can injure, damage or offend.
<u>RULE 304</u> : PM Concentration – North Zone	Each PM source	Emission of PM in effluent gas
<u>RULE 309</u> : Specific Contaminants	All emission units	Combustion contaminants
<u>RULE 311</u> : Sulfur Content of Fuel	All combustion units	Use of fuel containing sulfur
<u>RULE 317</u> : Organic Solvents	Emission units using solvents	Solvent used in process operations.

<b>Generic Requirements</b>	<b>Affected Emission Units</b>	<b>Basis for Applicability</b>
<u>RULE 321</u> : Solvent Cleaning Operations	Emission units using solvents	Solvent used in process operations.
<u>RULE 322</u> : Metal Surface Coating Thinner and Reducer	Emission units using solvents	Solvent used in process operations.
<u>RULE 323</u> : Architectural Coatings	Paints used in maintenance and surface coating activities	Application of architectural coatings.
<u>RULE 324</u> : Disposal and Evaporation of Solvents	Emission units using solvents	Solvent used in process operations.
<u>RULE 330</u> : Surface Coating of Metal Parts	Emission units using metal parts coating	Surface coating used in maintenance operations.
<u>RULE 353</u> : Adhesives and Sealants	Emission units using adhesives and sealants	Adhesives and sealants used in process operations.
<u>RULE 505.A, B1, D</u> : Breakdown Conditions	All emission units	Breakdowns where permit limits are exceeded or rule requirements are not complied with.
<u>RULE 603</u> : Emergency Episode Plans	Stationary sources with PTE greater than 100 tpy	Greka – Cat Canyon is a major source.
<u>REGULATION VIII</u> : New Source Review	All emission units	Addition of new equipment or modification to existing equipment. Applications to generate ERC Certificates.
<u>REGULATION XIII (RULES 1301-1305)</u> : Part 70 Operating Permits	All emission units	Greka – Cat Canyon is a major source.

**Table 3.4-2 Unit-Specific Federally-Enforceable APCD Rules**

<b>Unit-Specific Requirements</b>	<b>Affected Emission Units</b>	<b>Basis for Applicability</b>
<u>RULE 325</u> : Crude Oil Production and Separation	Shipping tanks	All pre-custody production and processing emission units
<u>RULE 331</u> : Fugitive Emissions Inspection & Maintenance	All components (valves, flanges, seals, compressors and pumps) used to handle oil and gas	Components emit fugitive ROCs.
<u>RULE 333</u> : Control of Emissions from Reciprocating Internal Combustion Engines		
<u>RULE 342</u> : Control of Oxides of Nitrogen from Boilers, Steam Generators and Process Heaters		Boilers and x Heater Treaters rated over 5.0 MMBtu/hr

<u>RULE 344</u> : Petroleum sumps, cellars and pits	Well cellar units	Cellars at an oil production lease.
<u>RULE 346</u> : Loading of Organic Liquid Cargo Vessels	Loading rack	Non-exempt loading rack at an oil production facility.

**Table 3.4-3 Non-Federally-Enforceable APCD Rules**

<b>Requirement</b>	<b>Affected Emission Units</b>	<b>Basis for Applicability</b>
<u>RULE 210</u> : Fees	All emission units	Administrative
<u>RULE 310</u> : Odorous Org. Sulfides	All emission units	Emission of organic sulfides
<u>RULES 501-504</u> : Variance Rules	All emission units	Administrative
<u>RULE 505.B2, B3, C, E, F, G</u> : Breakdown Conditions	All emission units	Breakdowns where permit limits are exceeded or rule requirements are not complied with.
<u>RULES 506-519</u> : Variance Rules	All emission units	Administrative

**Table 3.4-4 Adoption Dates of APCD Rules Applicable at Issuance of Permit**

<b>Rule No.</b>	<b>Rule Name</b>	<b>Adoption Date</b>
Rule 101	Compliance by Existing Installations: Conflicts	June 1981
Rule 102	Definitions	April 17, 1997
Rule 103	Severability	October 23, 1978
Rule 201	Permits Required	April 17, 1997
Rule 202	Exemptions to Rule 201	April 17, 1997
Rule 203	Transfer	April 17, 1997
Rule 204	Applications	April 17, 1997
Rule 205	Standards for Granting Permits	April 17, 1997
Rule 206	Conditional Approval of Authority to Construct or Permit to Operate	October 15, 1991
Rule 208	Action on Applications - Time Limits	April 17, 1997
Rule 212	Emission Statements	October 20, 1992
Rule 301	Circumvention	October 23, 1978
Rule 302	Visible Emissions	June 1981

<b>Rule No.</b>	<b>Rule Name</b>	<b>Adoption Date</b>
Rule 303	Nuisance	October 23, 1978
Rule 304	Particulate Matter Concentration - Northern Zone	October 23, 1978
Rule 309	Specific Contaminants	October 23, 1978
Rule 310	Odorous Organic Sulfides	October 23, 1978
Rule 311	Sulfur Content of Fuels	October 23, 1978
Rule 317	Organic Solvents	October 23, 1978
Rule 321	Solvent Cleaning Operations	September 18, 1997
Rule 322	Metal Surface Coating Thinner and Reducer	October 23, 1978
Rule 323	Architectural Coatings	July 18, 1996
Rule 324	Disposal and Evaporation of Solvents	October 23, 1978
Rule 325	Crude Oil Production and Separation	July 19, 2001
Rule 331	Fugitive Emissions Inspection and Maintenance	December 10, 1991
Rule 344	Petroleum Sumps, Pits and Well Cellars	November 10, 1994
Rule 353	Adhesives and Sealants	August 19, 1999
RULE 360	Emissions from Oxides of Nitrogen from Large Water Heaters and Small Boilers	October 17, 2002
RULE 361	Small Boilers, Steam Generators and Process Heaters	January 17, 2008
Rule 505	Breakdown Conditions (Section A, B1 and D)	October 23, 1978
Rule 603	Emergency Episode Plans	June 15, 1981
Rule 801	New Source Review	April 17, 1997
Rule 802	Nonattainment Review	April 17, 1997
Rule 803	Prevention of Significant Deterioration	April 17, 1997
Rule 804	Emission Offsets	April 17, 1997
Rule 805	Air Quality Impact and Modeling	April 17, 1997
Rule 806	Emission Reduction Credits	April 17, 1997
Rule 901	New Source Performance Standards (NSPS)	May 16, 1996
Rule 1001	National Emission Standards for Hazardous Air Pollutants (NESHAPS)	October 23, 1993

Rule No.	Rule Name	Adoption Date
Rule 1301	General Information	September 18, 1997
Rule 1302	Permit Application	November 9, 1993
Rule 1303	Permits	November 9, 1993
Rule 1304	Issuance, Renewal, Modification and Reopening	November 9, 1993
Rule 1305	Enforcement	November 9, 1993

### 3.5 **Compliance History**

This section contains a summary of the compliance history for this facility and was obtained from documentation contained in the APCD's Administrative file.

3.5.1 *Facility Inspections.* Since the prior permit renewal, facility inspections were conducted on May 22, 2008 and May 15, 2009. Each report indicates that the facility was operating in compliance with APCD rules and the conditions of this permit at the time of the inspections.

3.5.2 The following enforcement actions were issued to this lease since the previous permit renewal.

NOV 9386: Violation of Rule 311. Issued 12/12/2007. Failure to control emissions from the upper pond sump.

3.5.3 Significant Historical Hearing Board Actions / Variances: There are no significant historical Hearing Board actions or variances issued since the prior permit renewal.

## 4. **Engineering Analysis**

### 4.1 **General**

The engineering analyses performed for this permit were limited to the review of:

- ☞ facility process flow diagrams
- ☞ emission factors and calculation methods for each emissions unit
- ☞ emission control equipment (including RACT, BACT, NSPS, NESHAP, MACT)
- ☞ emission source testing, sampling, CEMS, CAM
- ☞ process monitors needed to ensure compliance

Unless noted otherwise, default ROC/THC reactivity profiles from the APCD's document titled "VOC/ROC Emission Factors and Reactivities for Common Source Types" dated 7/13/98 (ver. 1.1) was used to determine non-methane, non-ethane fraction of THC.

## 4.2 Stationary Combustion Sources

The stationary combustion sources associated with UCB Lease consist of a boiler, two heater treaters and free water knockout/de-sander vessel. Primary power at the lease is supplied by the local power company (Southern California Edison) electric grid.

- 4.2.1 *Gas-fired External Combustion Units.* The field gas-fired boiler, manufactured by Petrotherm, supply hot water for facility operations including crude oil heating. The unit is rated at 0.6 MMBtu/hour heat input; thus, it is exempt from Rule 342 emission standards. The facility also operates the following equipment: (a) a field gas-fired heater treater, manufactured by Natco and rated at 0.350 MMBtu/hour heat input, (b) a field gas-fired test treater, manufactured by National and rated at 0.6 MMBtu/hour heat input and (c) a field manufactured, field gas-fired free water knock-out vessel, rated at 1.0 MMBtu/hour heat input. These units are also exempt from Rule 342 emission standards. The calculation methodology for all external combustion units is:

$$ER = [ ( EF \times SCFPP \times HHV ) \div 10^6 ]$$

Where:

ER = emission rate (lb/period)  
EF = pollutant specific emission factor (lb/MMBtu)  
SCFPP = gas flow rate per operating period (scf/period)  
HHV = gas higher heating value (Btu/scf)

All emission factors for the 'uncontrolled' gas-fired external combustion units are obtained from the USEPA's AP-42 (Air Chief, Version 6.0, October 1998). Sulfur content of the field gas to the boiler, heater treaters and the free water knockout/de-sander vessel is assumed to be the Rule 311 applicable limit of 796 ppmv S (measured as hydrogen sulfide). Emission calculations are shown in Attachments 10.1 and 10.2.

## 4.3 Fugitive Hydrocarbon Sources

*General.* Fugitive emissions from valves, fittings, flanges, seals, pumps, compressors and wellheads (casings) consist of reactive organic compounds (ROC) and a variety of hazardous air pollutants (HAPs) such as benzene and hexane.

- 4.3.1 *Well Head Components.* For oil wells at existing onshore sources without a detailed component count inventory, the APCD uses statistical models developed by the CARB/KVB to quantify emissions of fugitive ROC. APCD Policy and Procedure 6100.060.1996 (*Calculation of Fugitive Hydrocarbon Emissions at Oil and Gas Facilities by the CARB/KVB Method*, July 1996) is used as the basis for implementing the CARB/KVB methodology. The CARB/KVB Method uses statistical models based on the facility's gas/oil ratio and the number of active wells to determine the emission factor. Emission factors from the CARB/KVB Method were also used determining emissions from wellhead casings (i.e., piping and equipment associated with the underground casing) and from pumps and compressors.

A control efficiency of 80% was applied for all components. Ongoing compliance is determined in the field by inspection with an organic vapor analyzer and verification of operator records. The calculation methodology is:

$$ER = [(EF \times \# \text{wells} \div 24) \times (1 - CE) \times (HPP)]$$

Where:

ER	=	Emission rate (lb./period)
EF	=	ROC emission factor (lb./well-day)
# Wells	=	Number of active oil and gas wells (well)
CE	=	Control efficiency
HPP	=	Operating hours per time period (hrs/period)

Ongoing compliance is determined in the field by inspection with an organic vapor analyzer and verification of operator records. Detailed emission calculations for fugitive emissions are shown in Attachments 10.1 and 10.2.

#### **4.4 Tanks/Vessels/Sumps/Separators**

4.4.1 *Tanks:* UCB Lease has two 1,000 barrel capacity crude oil shipping tanks. These tanks are steam heated, and equipped with a pressure-vacuum relief valve with a pressure setting of 0.11 psig. Both tanks are connected to the vapor recovery system. The detailed tank calculations for emissions will be performed using the methods presented in USEPA AP-42, Chapter 7.

4.4.2 *Sumps:* A six feet deep, 1444 barrel capacity secondary sump with a surface area of 900 square feet and an eight feet deep, 541 barrel capacity tertiary sump with a surface area of 300 square feet service the lease. Both sumps are open at the top, i.e., the emissions are not controlled. The sump's emissions are based on the CARB/KVB Report (*Emissions Characteristics of Crude Oil Production in California*, January 1983). The calculation is:

$$ER = [(EF \times SAREA \div 24) \times (1 - CE) \times (HPP)]$$

Where:

ER	=	emission rate (lb/period)
EF	=	ROC emission factor (lb/ft <sup>2</sup> -day)
SAREA	=	unit surface area (ft <sup>2</sup> )
CE	=	control efficiency
HPP	=	operating hours per time period (hrs/period)

4.4.3 *Portable Baker tanks:* Two (2) 500 barrel, portable Baker tanks service the UCB Lease on an as needed basis. These tanks are used anywhere within the South Cat Canyon Stationary source, as needed, for handling crude oil fluids. The detailed tank calculations for emissions will be performed using the methods presented in USEPA AP-42, Chapter 7. These vessels are classified as being in secondary production and heavy oil service and are connected to a vapor recovery system, whenever in use. The calculation is:

Where:

ER =	emission rate (lb/period)
EF =	ROC emission factor (lb/ft <sup>2</sup> -day)
SAREA =	unit surface area (ft <sup>2</sup> )
CE =	ROC vapor control efficiency (dimensionless)
HPP =	operating period (period)

Tank and sump emission calculations are provided in Attachments 10.1 and 10.2.

#### **4.5 Gas Collection/Vapor Recovery Systems**

- 4.5.1 *GCS/VRS.* A gas collection system (GCS) collects gas produced from the heater treater(s) and the free water knockout/de-sander vessel and routes it to the vapor recovery system (VRS). ROC vapor from the shipping tanks, and the loading rack are also directly recovered via a 15 hp, electrically-driven vapor recovery compressor. The compressor is manufactured by Blackmer, Model LB361 (serial no. 021605-1). The gas is compressed and then routed to the fuel gas system at the stationary source. A control efficiency of 95 percent is assigned to the VRS.
- 4.5.2 *Gas Scrubber.* A hydrogen sulfide scrubber operates at the lease to scrub gaseous fuel used.

#### **4.6 General Emission Sources**

- 4.6.1 *Surface Coating.* Surface coating operations typically include normal touch up activities. Emissions are determined based on mass balance calculations assuming all solvents evaporate into the atmosphere. Emissions of PM/PM<sub>10</sub> from paint over-spray are not calculated due to the lack of established calculation techniques.
- 4.6.2 *Solvent Use.* Solvent usage (not used as thinners for surface coating) occurring on UCB Lease as part of normal daily operations includes laboratory use and wipe cleaning maintenance. Mass balance emission calculations are used assuming all the solvent used evaporates to the atmosphere.
- 4.6.3 *Abrasive Blasting.* Abrasive blasting with CARB certified sands may be performed as a preparation step prior to surface coating. Particulate matter is emitted during this process. A general emission factor of 0.01 pound PM per pound of abrasive is used (SCAQMD - Permit Processing Manual, 1989) to estimate emissions of PM and PM<sub>10</sub> when needed for compliance evaluations. A PM/PM<sub>10</sub> ratio of 1.0 is assumed.

#### **4.7 Other Emission Sources**

*Crude Oil Loading Racks:* A single nozzle grade level loading rack is used to load crude oil into highway tanker trucks. Two other racks service the two Baker tanks. The racks are connected to the vapor recovery system at the lease and all trucks are loaded using bottom filling. The rack's ROC emissions are computed based on hourly oil loading rate of 160 bbl/hr. The peak daily oil loading is 2,000 bbl for the main rack and 500 bbl each for the

Baker tank racks. Controlled ROC emissions from crude oil tanker truck loading are estimated from emission equations and factors listed in USEPA, AP-42, (Section 5). The calculations are shown in Attachment 10.2.

#### **4.8 BACT/NSPS/NESHAP/MACT**

- 4.8.1 *BACT*. None of the emission units at UCB Lease are subject to best available control technology (BACT) or new source performance standards (NSPS).
- 4.8.2 *MACT - Subpart HH*: On June 17, 1999, EPA promulgated Subpart HH, a National Emission Standards for Hazardous Air Pollutants (NESHAPS) for Oil and Natural Gas Production and Natural Gas Transmission and Storage. Greka submitted information in June 2000 and supporting information in July 2000 indicating the Cat Canyon source was exempt from the requirements of this MACT based on ‘black oil’ production. The Greka South Cat Canyon source, which includes UCB lease, is still exempt from the requirements of this MACT.
- 4.8.3 *MACT - Subpart EEEE*: On August 27, 2003, EPA promulgated Subpart EEEE, a National Emission Standards for Hazardous Air Pollutants (NESHAPS) for Organic Liquids Distribution (Non-Gasoline). An APCD analysis determined that the requirements of this subpart are not applicable to oil and gas production facilities and thus do not apply to this facility.
- 4.8.4 *Proposed MACT - Subpart DDDDD*: Subpart DDDDD, Industrial, Commercial, and Institutional Boilers and Process Heaters. On September 13, 2004 EPA promulgated Subpart DDDDD, a National Emission Standards for Hazardous Air Pollutants (NESHAPS) for Industrial, Commercial, and Institutional Boilers and Process Heaters. Greka has existing small, gaseous fueled heaters (under 10 MMBtu/hr) at this facility, however, the subpart does not specify any emission limits or work practice standards for this class of units. Thus, no DDDDD requirements apply.

#### **4.9 CEMS/Process Monitoring/CAM**

- 4.9.1 *CEMS*: There are no CEMS at this facility.
- 4.9.2 *Process Monitoring*: In many instances, ongoing compliance beyond a single (snap shot) source test is assessed by the use of process monitoring systems. Examples of these monitors include: engine hour meters, fuel usage meters, water injection mass flow meters, flare gas flow meters and hydrogen sulfide analyzers. Once these process monitors are in place, it is important that they be well maintained and calibrated to ensure that the required accuracy and precision of the devices are within specifications. At a minimum, the following process monitors will be required to be calibrated and maintained in good working order:
- Processed Crude Oil Volume Flow Meter(s) at the “Loading Rack” unit
  - Produced Fuel Gas Volume Flow Meter(s) at the gas plant inlet
  - Boiler, Heater Treater, Tester Treater, and FWKO Vessel Fuel Flow Meters

To implement the above calibration and maintenance requirements, the APCD-approved *Fuel Use Monitoring and Process Monitor Calibration and Maintenance Plan* (April 2004) addresses manufacturer recommended maintenance and calibration schedules. Where manufacturer guidance is not available, the recommendations of comparable equipment manufacturers and good engineering judgment is be utilized.

- 4.9.3 *CAM*: The Greka South Cat Canyon Stationary Source is a major source that is subject to the USEPA's Compliance Assurance Monitoring (CAM) rule (40 CFR 64). Any emissions unit with uncontrolled emissions potential exceeding major source emission thresholds for any pollutant is subject to CAM provisions. Compliance with this rule was evaluated and it was determined that no emission units at this facility are currently subject to CAM.

#### **4.9 4.10 Source Testing/Sampling**

Source testing and sampling are required in order to ensure compliance with permitted emission limits, prohibitory rules, control measures and the assumptions that form the basis of this operating permit. However, no equipment listed in this permit is subject to source testing. At a minimum, the process streams below are required to be sampled and analyzed. Duplicate samples are required:

- Produced Gas: A sample of the produced gas shall be obtained from the gas line entering each permitted combustion unit. Analysis for HHV shall be measured quarterly, annually for total sulfur, and monthly for hydrogen sulfide. [NOTE: Under a County Land Use permit, Greka must keep the gas pipeline fuel S level below 29 ppmvd; Greka continuously monitors its fuel line, using APCD-approved methods (Re: *APCD ATC/PTO 9412*) to comply with this restriction]. Sampling shall be conducted consisted with the APCD approved *Fuel Gas Sulfur and HHV Monitoring Plan*.
- Produced Oil/waste water: Sample taken at the initial wash tank. Analysis for: API gravity, true vapor pressure. Samples shall be taken on an annual basis per the APCD approved *Rule 325 Sampling Plan*.

All sampling and analyses are required to be performed according to APCD approved procedures and methodologies. Typically, the appropriate ASTM methods are acceptable. However, TVP sampling methods for liquids with an API gravity under 20<sup>O</sup> require specialized procedures (see APCD Rule 325). It is important that all sampling and analysis be traceable by chain of custody procedures.

#### **4.10 Part 70 Engineering Review: Hazardous Air Pollutant Emissions**

Hazardous air pollutant emissions (HAPs) have not been estimated for this facility.

## 5. Emissions

### 5.1 General

This Part 70/APCD PTO 10258 reevaluation addresses operations at UCB Lease. The Part70/ PTO 10258 renewal evaluated any new requirements that needed to be addressed since the last renewal, any applicable changes to the equipment list, and whether monitoring was sufficient for compliance. Emissions calculations are divided into "permitted" and "exempt" categories. Permit exempt equipment is determined by APCD Rule 202. The permitted emissions for each emissions unit is based on the equipment's potential-to-emit (as defined by Rule 102). Section 5.2 details the permitted emissions for each emissions unit. Section 5.3 details the overall permitted emissions for the facility based on reasonable worst-case scenarios using the potential-to-emit for each emissions unit. Section 5.4 provides the federal potential to emit calculation using the definition of potential to emit used in Rule 1301. Section 5.5 provides the estimated emissions from permit exempt equipment and also serves as the Part 70 list of insignificant emission. Section 5.6 provides the net emissions increase calculation for the facility and the stationary source. In order to accurately track the emissions from a facility, the APCD uses a computer database. Attachment 10.4 contains the APCD's documentation for the information entered into that database.

### 5.2 Permitted Emission Limits - Emission Units

Each emissions unit associated with the facility was analyzed to determine the potential-to-emit for the following pollutants:

- ⇒ Nitrogen Oxides (NO<sub>x</sub>)<sup>2</sup>
- ⇒ Reactive Organic Compounds (ROC)
- ⇒ Carbon Monoxide (CO)
- ⇒ Sulfur Oxides (SO<sub>x</sub>)<sup>3</sup>
- ⇒ Particulate Matter (PM)<sup>4</sup>
- ⇒ Particulate Matter smaller than 10 microns (PM<sub>10</sub>)

Permitted emissions are calculated for both short term (daily) and long term (annual) time periods. Section 4.0 (Engineering Analysis) provides a general discussion of the basic calculation methodologies and emission factors used. The reference documentation for the specific emission calculations, as well as detailed calculation spreadsheets, may be found in Section 4 and Attachments 10.1 and 10.2 respectively. Table 5.2-1 provides the basic operating characteristics. Table 5.2-2 provides the specific emission factors. Table 5.3-1 shows the permitted short-term emissions and Table 5.2-4 shows the permitted long-term emissions for each unit or operation. In the table, the last column indicates whether the emission limits are federally enforceable.

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<sup>2</sup> Calculated and reported as nitrogen dioxide (NO<sub>2</sub>)

<sup>3</sup> Calculated and reported as sulfur dioxide (SO<sub>2</sub>)

<sup>4</sup> Calculated and reported as all particulate matter smaller than 100 µm

Table 5.2-1: Operating Equipment Description  
Greka Cat Canyon - UCB Lease

Equipment Item	Description	APCD DeviceNo	Device Specifications					Usage Data			Maximum Operating Schedule				References
			Fuel	HHV	ppmv S <sup>(a)</sup>	Size	Units	Capacity	Units	Emission Reduction %	hr	day	qtr	year	
Combustion: External	Boiler: Petrothem	4080	FG	1050	796	0.60	MMBtu/hr	0.60	MMBtu/hr	--	1.00	24	2190	8760	A
	Heater Treater	4077	FG	1050	796	1.50	MMBtu/hr	1.50	MMBtu/hr	--	1.00	24	2190	8760	
	Test Treater	4078	FG	1050	796	0.60	MMBtu/hr	0.60	MMBtu/hr	--	1.00	24	2190	8760	
	FWKO/De-Sander	4079	FG	1050	796	1.00	MMBtu/hr	1.00	MMBtu/hr	--	1.00	24	2190	8760	
Fugitive Components - Gas/Heavy Liquid	Valves and fittings	4083	--	--	--	6 well units		--	--	80%	1.00	24	2190	8760	B
	Wellheads	4088	--	--	--	6 well units		--	--	80%	1.00	24	2190	8760	
Tanks	Crude Tank	4076	--	--	--	21.5' x 16'		1,000	bbl	--	1.00	24	2190	8760	C
	Crude Tank	5227	--	--	--	21.5' x 16'		1,000	bbl	--	1.00	24	2190	8760	
	Baker Tank #1	100350	--	--	--	35' x 8'		500	bbl	--	1.00	24	2190	8760	
	Baker Tank #2	100443	--	--	--	35' x 8'		500	bbl	--	1.00	24	2190	8760	
Sumps/Cellars/Pits	Well Cellars	4087	--	--	--	128 ft <sup>2</sup>				70%	1.00	24	2190	8760	D
	Wastewater Sump - Tertiary	4086	--	--	--	300 ft <sup>2</sup>		541	bbl	0%	1.00	24	2190	8760	
	Wastewater Sump - Secondary	4085	--	--	--	900 ft <sup>2</sup>		1,444	bbl	0%	1.00	24	2190	8760	
Loading Racks	Crude Oil Loading Rack	4089	--	--	--	6.72 kgal/hr				--	1.00	13	86	342	E
	Baker Tank Loading Rack #1	100351	--	--	--	6.72 kgal/hr				--	1.00	3	57	228	
	Baker Tank Loading Rack #2	100444	--	--	--	6.72 kgal/hr				--	1.00	3	57	228	

Footnotes:

(a) ppmv as total reduced sulfur content expressed as hydrogen sulfide equivalent; but not hydrogen sulfide content only.

Table 5.2-2: Equipment Emission Factors  
Greka Cat Canyon - UCB Lease

Equipment Category	Description	Emission Factors							Reference
		NOx	ROC	CO	SOx	PM	PM10	Units	
Combustion: External	Boiler: Petrotherm	0.0980	0.0054	0.0824	0.1362	0.0075	0.0075	lb/MMBtu	A
	Heater Treater	0.0980	0.0054	0.0824	0.1362	0.0075	0.0075	lb/MMBtu	
	Test Treater	0.0980	0.0054	0.0824	0.1362	0.0075	0.0075	lb/MMBtu	
	FWKO/De-Sander	0.0980	0.0054	0.0824	0.1362	0.0075	0.0075	lb/MMBtu	
Fugitive Components - Gas/Heavy Liquid	Valves and fittings	--	2.81	--	--	--	--	lb/day-well	B
	Wellheads	--	0.0950833	--	--	--	--	lb/day-well	
Tanks	Crude Tank	See Table 10.2		--	--	--	--	AP-42, Ch.7	C
	Crude Tank	See Table 10.3		--	--	--	--		
	Baker Tank #1	See Table 10.4		--	--	--	--		
	Baker Tank #2	See Table 10.5		--	--	--	--		
Sumps/Cellars/Pits	Well Cellars	--	0.0941	--	--	--	--	lb/ft <sup>2</sup> -day	D
	Wastewater Sump - Tertiary	--	0.0058	--	--	--	--	lb/ft <sup>2</sup> -day	
	Wastewater Sump - Secondary	--	0.0126	--	--	--	--	lb/ft <sup>2</sup> -day	
Loading Racks	Crude Oil Loading Rack	--	0.701	--	--	--	--	lb/kgal	E
	Baker Tank Loading Rack #1	--	1.368	--	--	--	--	lb/kgal	
	Baker Tank Loading Rack #2	--	1.368	--	--	--	--	lb/kgal	

Footnotes:

(a) SOx as SO<sub>2</sub>; NOx as NO<sub>2</sub>. This applies to all sheets.

Table 5.2-3: Short-Term Emissions  
Greka Cat Canyon - UCB Lease

Equipment Category	Description	NOx	ROC	CO	SOx	PM	PM10	Federal
		lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	Enforceability
Combustion: External	Boiler: Petrotherm	1.41	0.08	1.19	1.96	0.11	0.11	AE
	Heater Treater	3.53	0.19	2.97	4.90	0.27	0.27	AE
	Test Treater	1.41	0.08	1.19	1.96	0.11	0.11	AE
	FWKO/De-Sander	2.35	0.13	1.98	3.27	0.18	0.18	AE
Fugitive Components - Gas/Heavy Liquid	Valves and fittings	--	3.37	--	--	--	--	AE
	Wellheads	--	0.11	--	--	--	--	AE
Tanks	Crude Tank	--	0.22	--	--	--	--	AE
	Crude Tank	--	0.22	--	--	--	--	AE
	Baker Tank #1	--	0.14	--	--	--	--	FE
	Baker Tank #2	--	0.14	--	--	--	--	FE
Sumps/Cellars/Pits	Well Cellars	--	3.61	--	--	--	--	AE
	Wastewater Sump - Tertiary	--	1.74	--	--	--	--	AE
	Wastewater Sump - Secondary	--	11.34	--	--	--	--	AE
Loading Racks	Crude Oil Loading Rack	--	2.61	--	--	--	--	AE
	Baker Tank Loading Rack #1	--	1.27	--	--	--	--	FE
	Baker Tank Loading Rack #2	--	1.27	--	--	--	--	FE

Notes:

AE = APCD Only

FE = Federally Enforceable

Table 5.2-4: Long-Term Emissions  
Greka Cat Canyon - UCB Lease

Equipment Category	Description	NOx	ROC	CO	SOx	PM	PM10	Federal
		TPY	TPY	TPY	TPY	TPY	TPY	Enforceability
Combustion: External	Boiler: Petrotherm	0.26	0.01	0.22	0.36	0.02	0.02	AE
	Heater Treater	0.64	0.04	0.54	0.89	0.05	0.05	AE
	Test Treater	0.26	0.01	0.22	0.36	0.02	0.02	AE
	FWKO/De-Sander	0.43	0.02	0.36	0.60	0.03	0.03	AE
Fugitive Components - Gas/Heavy Liquid	Valves and fittings	--	0.61	--	--	--	--	AE
	Wellheads	--	0.02	--	--	--	--	AE
Tanks	Crude Tank	--	0.04	--	--	--	--	AE
	Crude Tank	--	0.04	--	--	--	--	AE
	Baker Tank #1	--	0.03	--	--	--	--	FE
	Baker Tank #2	--	0.03	--	--	--	--	FE
Sumps/Cellars/Pits	Well Cellars	--	0.66	--	--	--	--	AE
	Wastewater Sump - Tertiary	--	0.32	--	--	--	--	AE
	Wastewater Sump - Secondary	--	2.07	--	--	--	--	AE
Loading Racks	Crude Oil Loading Rack	--	0.04	--	--	--	--	AE
	Baker Tank Loading Rack #1	--	0.05	--	--	--	--	FE
	Baker Tank Loading Rack #2	--	0.05	--	--	--	--	FE

Notes:

AE = APCD Only

FE = Federally Enforceable

### 5.3 Permitted Emission Limits - Facility Totals

The total potential-to-emit for all emission units associated with the facility was analyzed. This analysis looked at the reasonable worst-case operating scenarios for each operating period. The equipment operating in each of the scenarios are presented below. Unless otherwise specified, the operating characteristics defined in for each emission unit are assumed. Table 5.3-1 shows the total permitted emissions for the facility.

#### Daily Scenario:

- Heater treaters, Free water knockout/de-sander vessel and Boiler
- Fugitive emission from the oil wells, including well cellars
- Crude Oil shipping tanks and Portable Baker tanks
- Waste water sumps
- Loading rack

#### Annual Scenario:

- Heater treaters , Free water knockout/de-sander vessel and Boiler
- Fugitive emission from the oil wells, including well cellars
- Crude Oil shipping tanks and Portable Baker tanks
- Waste water sumps
- Loading rack

**Table 5.3-1 Total Permitted Facility Emissions**

#### **A. Daily**

<b>Equipment Category</b>	<b>NOx</b>	<b>ROC</b>	<b>CO</b>	<b>SOx</b>	<b>PM</b>	<b>PM10</b>
External Combustion	8.70	0.48	7.32	12.09	0.67	0.67
Fugitive Components - Gas/Heavy Liquid	--	3.48	--	--	--	--
Tanks	--	0.72	--	--	--	--
Sumps/Cellars/Pits	--	16.69	--	--	--	--
Loading Racks	--	5.15	--	--	--	--
<b>Totals (lb/day)</b>	<b>8.70</b>	<b>26.52</b>	<b>7.32</b>	<b>12.09</b>	<b>0.67</b>	<b>0.67</b>

#### **B. Annual**

<b>Equipment Category</b>	<b>NOx</b>	<b>ROC</b>	<b>CO</b>	<b>SOx</b>	<b>PM</b>	<b>PM10</b>
External Combustion	1.59	0.09	1.34	2.21	0.12	0.12
Fugitive Components - Gas/Heavy Liquid	--	0.64	--	--	--	--
Tanks	--	0.14	--	--	--	--
Sumps/Cellars/Pits	--	3.05	--	--	--	--
Loading Racks	--	0.13	--	--	--	--
<b>Totals (TPY)</b>	<b>1.59</b>	<b>4.04</b>	<b>1.34</b>	<b>2.21</b>	<b>0.12</b>	<b>0.12</b>

#### 5.4 **Part 70: Federal Potential to Emit for the Facility**

Table 5.4-1 lists the federal Part 70 potential to emit. For facilities subject to Part 70 Regulation, all emissions, except fugitive emissions, are counted in the federal definition of potential to emit. However, fugitives are counted in the Federal potential to emit if the facility is subject to any applicable NSPS or NESHAP requirement. UCB Lease is not subject to any NSPS/NESHAP.

**Table 5.4-1 Federal Potential to Emit**

**A. Daily**

<b>Equipment Category</b>	<b>NOx</b>	<b>ROC</b>	<b>CO</b>	<b>SOx</b>	<b>PM</b>	<b>PM10</b>
External Combustion	8.70	0.48	7.32	12.09	0.67	0.67
Tanks	--	0.72	--	--	--	--
<b>Totals (lb/day)</b>	<b>8.70</b>	<b>1.20</b>	<b>7.32</b>	<b>12.09</b>	<b>0.67</b>	<b>0.67</b>

**C. Annual**

<b>Equipment Category</b>	<b>NOx</b>	<b>ROC</b>	<b>CO</b>	<b>SOx</b>	<b>PM</b>	<b>PM10</b>
External Combustion	1.59	0.09	1.34	2.21	0.12	0.12
Tanks	--	0.14	--	--	--	--
<b>Totals (TPY)</b>	<b>1.59</b>	<b>0.23</b>	<b>1.34</b>	<b>2.21</b>	<b>0.12</b>	<b>0.12</b>

## 5.5 **Exempt Emission Sources/Part 70 Insignificant Emissions**

Equipment/activities exempt pursuant to Rule 202 include maintenance operations involving surface coating. Under the APCD's Part 70 regulation, equipment/activities that are exempt under Rule 202 are considered insignificant units emissions. In addition, insignificant activities such as maintenance operations using paints and coatings, contribute to the facility emissions. Table 5.5-1 lists these exempt emissions units and the expected emissions. These are emission estimates only. They are not limitations.

**Table 5.5-1 Estimated Permit Exempt Emissions**

Equipment Category	Description	Exemption Claimed	Usage Data		Reference
			Volume	Unit	
Solvent Usage	Maintenance (Wipe Cleaning)	202.U	55	gal/yr	F
	Laboratory Use	202.N			F

Equipment Category	Description	Emission Factor	Unit	NOx	ROC	CO	SOx	PM	PM10
Solvent Usage	Maintenance (Wipe Cleaning)	6.6	lb/gal	--	0.18	--	--	--	--
	Laboratory Use			--	10	--	--	--	--
Totals (TPY):				0.00	10.18	0.00	0.00	0.00	0.00

## 5.6 **Net Emissions Increase (NEI) Calculation**

The NEI Equation used by the APCD is:  $NEI = I + (P1 - P2) - D$

Where:

- I = Potential to emit of the modification
- P1 = All prior PTE increases requiring permits on or after 11/15/1990
- P2 = All prior PTE decreases requiring permits on or after 11/15/1990
- D = Pre-1990 baseline actual emission decreases = zero

This facility's net emissions increase since November 15, 1990 (the day the federal Clean Air Act Amendments was adopted in 1990) is attributed to ATC 10174 issued in July, 1999. The net emissions increase based on this ATC occurred for ROC only. The NEI for the UCB Lease is shown in Table 5.6-1. The Greka South Cat Canyon stationary source NEI is listed in Table 10.4-3 in Attachment 10.4 of this permit. The stationary source does not trigger APCD Rule 802 ROC offset thresholds for any pollutants.

**Table 5.6-1 Facility Net Emissions Increase (NEI-90)**

Permit	Description	Issued	Units	NOx	ROC	CO	Sox	PM	PM10
ATC 10174	Baker Tanks	8/10/1999	lbs/hr	--	0.12	--	--	--	--
			lbs/day	--	2.83	--	--	--	--
			TPQ	--	0.035	--	--	--	--
			TPY	--	0.14	--	--	--	--
Facility NEI Contribution		P1	lbs/hr	--	<b>0.12</b>	--	--	--	--
			lbs/day	--	<b>2.83</b>	--	--	--	--
			TPQ	--	<b>0.04</b>	--	--	--	--
			TPY	--	<b>0.14</b>	--	--	--	--

## **6. Air Quality Impact Analyses**

### **6.1 Modeling**

Air quality modeling was not required for this stationary source.

### **6.2 Increments**

An air quality increment analysis was not required for this stationary source.

### **6.3 Monitoring**

Air quality monitoring is not required for this stationary source.

### **6.4 Health Risk Assessment**

The Greka Cat Canyon stationary source is subject to the Air Toxics Hot-Spots Program (AB-2588). A health risk assessment (HRA) for the Greka Cat Canyon stationary source, as it was configured at that time, was prepared by the APCD in 2000 under the requirements of the Air Toxics “Hot Spots” Information and Assessment Act of 1987 (AB 2588). The HRA is based on 1998 toxic emissions inventory data submitted to the APCD by Greka.

Based on the 1998 toxic emissions inventory, a cancer risk of 12 per million at the property boundary was estimated for part of the Cat Canyon stationary source, which included the Bell, Blockman and Palmer-Stendl leases and all associated equipment. This risk is primarily due to emissions of polycyclic aromatic hydrocarbons (PAHs) and acrolein from internal combustion engines and gas-fired boilers. The hazard index (HI) for the facilities was determined to be 0.27 for chronic risk, and 22.93 for acute risk. HI is a ratio of the predicted concentration of the facilities reported emissions to a concentration considered acceptable to public health professionals. The baseline for significant cancer risk is 10 and for non-cancer risk is 1, therefore both the cancer and acute risk are considered significant. The cancer and non-cancer chronic risk projections are over the APCD’s AB-2588 significance thresholds of 10 in a million and 1.0 respectively.

A separate HRA was completed for the Dominion and UCB leases since the leases historically were owned and operated by Dominion Oil Company, separate from the current owners/operators of the Greka Cat Canyon source. Based on the 1998 toxic emissions inventory, these two leases were assessed a cancer risk of 2 per million at the property boundary. This risk is primarily due to emissions of acrolein from internal combustion engines and gas-fired boilers. The hazard index (HI) for the facilities was determined to be 0.05 for chronic risk, and 4.3 for acute risk. The baseline for significant non-cancer risk is 1, therefore only the acute risk is considered significant.

An HRA for the Vintage Petroleum West Cat Canyon leases was completed in June 1993, including Goodwin A, Lloyd, Mortensen, and Security Fee leases. Based on the 1991 toxic emissions inventory, these four leases were assessed a cancer risk of 4 per million at the property boundary. The hazard index (HI) for the facilities was determined to be 0.5 for chronic risk, and 0.7 for acute risk. The baseline for significant non-cancer risk is 1, therefore neither the acute or chronic risk is considered significant.

The APCD is currently reviewing an Air Toxics Emission Inventory Report (ATEIR) for reporting year 2003 for the stationary source. Upon APCD approval of the ATEIR, the APCD will conduct a health risk assessment using the Hotspots Analysis and Reporting Program (HARP) software. The HRA based on reporting year 2003 is expected to be completed in 2009.

## **7. CAP Consistency, Offset Requirements and ERCs**

### **7.1 General**

Santa Barbara County has been classified as non attainment for the state eight-hour ozone standard as well as the state 24-hour and annual PM<sub>10</sub> ambient air quality standards. The County is either in attainment of or unclassified with respect to all other state ambient air quality standards.

Santa Barbara County's air quality has historically violated federal ozone standards. Since 1999 however, local air quality data show that every monitoring location in the County complied with the federal one-hour ambient air quality standard for ozone. The Santa Barbara County Air Pollution District adopted the 2001 Clean Air Plan (2001 CAP) that demonstrated attainment of the federal one-hour ozone standard and continued maintenance of that standard through 2015. Consequently, on August 8, 2003, the United States Environmental Protection Agency (USEPA) designated Santa Barbara County as an attainment area for the federal one-hour ozone standard.

On June 15, 2004, USEPA replaced the federal one-hour ozone standard with an eight-hour ozone standard. This eight-hour ozone standard, originally promulgated by USEPA on July 18, 1997, was set at 0.08 parts per million measured over eight hours and is more protective of public health and more stringent than the federal one-hour standard. In March 2008, USEPA lowered that standard to 0.075 parts per million. While USEPA has yet to formally designate Santa Barbara County with respect to the 0.075 parts per million standard, the state has recommended to USEPA that Santa Barbara County be designated as attainment.

Therefore, emissions from all emission units at the stationary source and its constituent facilities must be consistent with the provisions of the USEPA and State approved Clean Air Plans (CAP) and must not interfere with progress toward attainment or maintenance of federal and state ambient air quality standards. Under APCD regulations, any modifications at the LOGP (or the Point Pedernales/Lompoc Oil Field Stationary Source) that result in an emissions increase of any nonattainment pollutant exceeding 25 lbs/day must apply BACT (NAR). Additional increases may trigger offsets at the source or elsewhere so that there is a net air quality benefit for Santa Barbara County. These offset threshold levels are 55 lbs/day for all non-attainment pollutants except PM<sub>10</sub> for which the level is 80 lbs/day. These thresholds apply to net emission increases since November 15, 1990 as defined in District Rule 801.

### **7.2 Clean Air Plan**

On August 16, 2007, the APCD Board adopted the 2007 Clean Air Plan to chart a course of

action that provided for ongoing maintenance of the federal eight-hour ozone standard through the year 2014, as well as the expeditious attainment of the state one-hour ozone standard. These plans were developed for Santa Barbara County as required by both the 1998 California Clean Air Act and the 1990 Federal Clean Air Act Amendments. Santa Barbara County has now attained the state one-hour ozone standard but does not attain the state eight-hour ozone standard.

In 2010 the APCD will update those provisions of the 2007 Clean Air Plan which demonstrate expeditious attainment of the state eight-hour ozone standard. No changes will be made 2007 Clean Air Plan sections which demonstrate continued maintenance of the federal eight-hour ozone standard.

### **7.3 Offset Requirements**

The Greka South Cat Canyon stationary source does trigger offsets for any pollutant.

### **7.4 Emission Reduction Credits**

Emission reduction credits, granted to Greka are detailed in revised DOI 006 issued to Greka by the APCD, in May 2003. The ERC's are based on IC Engine emission reductions at the Bell Lease Compressor Plant [Re: APCD PTO 8036, ATC 9975-01, DOI 006-02] The original ERC certificate #0011-1103 issued to Greka per DOI 006 has since been sold in part to various sources within Santa Barbara County. ERC certificate #0096-1108 includes the remaining portion (CO credits) of the original ERC owned by Greka. This certificate was renewed in November 2008 as ERC Certificate #0096-0189.

## **8. Lead Agency Permit Consistency**

To the best of the APCD's knowledge, no other governmental agency's permit requires air quality mitigation for emissions pursuant to this permit issued to the UCB Lease.

## **9. Permit Conditions**

This section lists the applicable permit conditions for UCB Lease. Section A lists the standard administrative conditions. Section B lists 'generic' permit conditions, including emission standards, for all equipment in this permit. Section C lists conditions affecting specific equipment. Section D lists non-federally enforceable (i.e., APCD only) permit conditions. Conditions listed in Sections A, B and C are enforceable by the USEPA, the APCD, the State of California and the public. Conditions listed in Section D are enforceable only by the APCD and the State of California. Where any reference contained in Sections 9.A, 9.B or 9.C refers to any other part of this permit, that part of the permit referred to is federally enforceable. In case of a discrepancy between the wording of a condition and the applicable federal or APCD rule(s), the wording of the rule shall control.

For the purposes of submitting compliance certifications or establishing whether or not a person has violated or is in violation of any standard in this permit, nothing in the permit shall preclude the use, including the exclusive use, of any credible evidence or information,

relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test had been performed.

## **9.A Standard Administrative Conditions**

The following federally-enforceable administrative permit conditions apply to UCB Lease:

### **Section 9.A Standard Administrative Conditions**

Number	Title
A.1	Compliance with Permit Conditions
A.2	Emergency Provisions
A.3	Compliance Plan
A.4	Right of Entry
A.5	Permit Life
A.6	Payment of Fees
A.7	Prompt Reporting of Deviations
A.8	Reporting Requirements/Compliance Certification
A.9	Federally Enforceable Conditions
A.10	Recordkeeping Requirements
A.11	Conditions for Permit Reopening
A.12	Credible Evidence

#### **A.1 Compliance with Permit Conditions.**

- (a) The permittee shall comply with all permit conditions in Sections 9.A, 9.B and 9.C.
- (b) This permit does not convey property rights or exclusive privilege of any sort.
- (c) Any permit noncompliance with sections 9.A, 9.B, or 9.C constitutes a violation of the Clean Air Act and is grounds for enforcement action; for permit termination, revocation and re-issuance, or modification; or for denial of a permit renewal application.
- (d) It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- (e) A pending permit action or notification of anticipated noncompliance does not stay any permit conditions.
- (f) Within a reasonable time period, the permittee shall furnish any information requested by the Control Officer, in writing, for the purpose of determining:
  - (i) Compliance with the permit, or
  - (ii) Whether or not cause exists to modify, revoke and reissue, or terminate a permit or for an enforcement action.
- (g) In the event that any condition herein is determined to be in conflict with any other condition contained herein, then, if principles of law do not provide to the contrary,

the condition most protective of air quality and public health and safety shall prevail to the extent feasible.

*[Re: 40 CFR Part 70.6.(a)(6), APCD Rules 1303.D.1]*

- A.2 **Emergency Provisions.** The permittee shall comply with the requirements of the APCD, Rule 505 (Upset/Breakdown rule) and/or APCD Rule 1303.F, whichever is applicable to the emergency situation. In order to maintain an affirmative defense under Rule 1303.F, the permittee shall provide the APCD, in writing, a “notice of emergency” within 2 working days of the emergency. The “notice of emergency” shall contain the information/documentation listed in Sections (1) through (5) of Rule 1303.F. *[Re: 40 CFR 70.6(g), APCD Rule 1303.F ]*
- A.3 **Compliance Plan.**
- (a) The permittee shall comply with all federally enforceable requirements that become applicable during the permit term in a timely manner.
  - (b) For all applicable equipment, the permittee shall implement and comply with any specific compliance plan required under any federally-enforceable rules or standards. *[Re: APCD Rule 1302.D.2]*
- A.4 **Right of Entry.** The Regional Administrator of USEPA, the Control Officer, or their authorized representatives, upon the presentation of credentials, shall be permitted to enter upon the premises where a Part 70 Source is located or where records must be kept:
- (a) To inspect the stationary source, including monitoring and control equipment, work practices, operations, and emission-related activity;
  - (b) To inspect and duplicate, at reasonable times, records required by this Permit to Operate;
  - (c) To sample substances or monitor emissions from the source or assess other parameters to assure compliance with the permit or applicable requirements, at reasonable times. Monitoring of emissions can include source testing. *[Re: APCD Rule 1303.D.2]*
- A.5 **Permit Life.** The Part 70 permit shall become invalid three years from the date of issuance unless a timely and complete renewal application is submitted to the APCD. Any operation of the source to which this Part 70 permit is issued beyond the expiration date of this Part 70 permit and without a valid Part 70 operating permit (or a complete Part 70 permit renewal application) shall be a violation of the CAAA, § 502(a) and 503(d) and of the APCD rules.
- (a) The permittee shall apply for renewal of the Part 70 permit no later than 6 months before the date of the permit expiration. Upon submittal of a timely and complete renewal application, the Part 70 permit shall remain in effect until the Control Officer issues or denies the renewal application. *[Re: APCD Rule 1304.D.1]*
- A.6 **Payment of Fees.** The permittee shall reimburse the APCD for all its Part 70 permit processing and compliance expenses for the stationary source on a timely basis. Failure to reimburse on a timely basis shall be a violation of this permit and of applicable requirements and can result in forfeiture of the Part 70 permit. Operation without a Part 70 permit subjects the source to potential enforcement action by the APCD and the USEPA pursuant to section 502(a) of the Clean Air Act. *[Re: APCD Rules 1303.D.1 and 1304.D.11, 40 CFR 70.6(a)(7)]*

- A.7 **Prompt Reporting of Deviations.** The permittee shall submit a written report to the APCD documenting each and every deviation from the requirements of this permit or any applicable federal requirements within seven (7) days after discovery of the violation, but not later than six (6) months after the date of occurrence. The report shall clearly document 1) the probable cause and extent of the deviation, 2) equipment involved, 3) the quantity of excess pollutant emissions, if any, and 4) actions taken to correct the deviation. The requirements of this condition shall not apply to deviations reported to APCD in accordance with Rule 505, Breakdown Conditions, or Rule 1303.F Emergency Provisions. *[APCD Rule 1303.D.1, 40 CFR 70.6(a) (3)]*
- A.8 **Reporting Requirements/Compliance Certification.** The permittee shall submit compliance certification reports to the USEPA and the Control Officer every six months. These reports shall be submitted on APCD forms and shall identify each applicable requirement/condition of the permit, the compliance status with each requirement/condition, the monitoring methods used to determine compliance, whether the compliance was continuous or intermittent, and include detailed information on the occurrence and correction of any deviations (excluding emergency upsets) from permit requirement. The reporting periods shall be each half of the calendar year, e.g., January through June for the first half of the year. These reports shall be submitted by September 1<sup>st</sup> and March 1<sup>st</sup>, respectively, each year. Supporting monitoring data shall be submitted in accordance with the “Semi-Annual Compliance Verification Report” condition in section 9.C. The permittee shall include a written statement from the responsible official, which certifies the truth, accuracy, and completeness of the reports. *[Re: APCD Rules 1303.D.1, 1302.D.3, 1303.2.c]*
- A.9 **Federally Enforceable Conditions.** Each federally enforceable condition in this permit shall be enforceable by the USEPA and members of the public. None of the conditions in the APCD-only enforceable section of this permit are federally enforceable or subject to the public/USEPA review *[Re: CAAA, §502(b)(6), 40 CFR 70.6(b)]*
- A.10 **Recordkeeping Requirements.** The permittee shall maintain records of required monitoring information that include the following:
- (a) The date, place as defined in the permit, and time of sampling or measurements;
  - (b) The date(s) analyses were performed;
  - (c) The company or entity that performed the analyses;
  - (d) The analytical techniques or methods used;
  - (e) The results of such analyses; and
  - (f) The operating conditions as existing at the time of sampling or measurement;
- The records (electronic or hard copy), as well as all supporting information including calibration and maintenance records, shall be maintained for a minimum of five (5) years from date of initial entry by the permittee and shall be made available to the APCD upon request. *[Re: APCD Rule 1303.D.1.f, 40 CFR 70.6(a)(3)(ii)(A)]*
- A.11 **Conditions for Permit Reopening.** The permit shall be reopened and revised for cause under any of the following circumstances:
- (a) Additional Requirements: If additional applicable requirements (e.g., NSPS or MACT) become applicable to the source which has an unexpired permit term of three

(3) or more years, the permit shall be reopened. Such a reopening shall be completed no later than 18 months after promulgation of the applicable requirement. However, no such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended. All such re-openings shall be initiated only after a 30 day notice of intent to reopen the permit has been provided to the permittee, except that a shorter notice may be given in case of an emergency.

- (b) Inaccurate Permit Provisions: If the APCD or the USEPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emission standards or other terms or conditions of the permit, the permit shall be reopened. Such re-openings shall be made as soon as practicable.
- (c) Applicable Requirement: If the APCD or the USEPA determines that the permit must be revised or revoked to assure compliance with any applicable requirement including a federally enforceable requirement, the permit shall be reopened. Such re-openings shall be made as soon as practicable.
- (d) Administrative procedures to reopen a permit shall follow the same procedures as apply to initial permit issuance. Re-openings shall affect only those parts of the permit for which cause to reopen exists. If the permit is reopened, and revised, it will be reissued with the expiration date that was listed in the permit before the re-opening. *[Re: 40 CFR 70.7(f), 40 CFR 70.6(a)]*

A.12 **Credible Evidence.** Nothing in this permit shall alter or affect the ability of any person to establish compliance with, or a violation of, any applicable requirement through the use of credible evidence to the extent authorized by law. Nothing in this permit shall be construed to waive any defenses otherwise available to the permittee, including but not limited to, any challenge to the Credible Evidence Rule (see 62 Fed. Reg. 8314, Feb. 24, 1997), in the context of any future proceeding. *[Re: 40 CFR 52.12(c)]*

## 9.1 9.B. Generic Conditions

The generic conditions listed below apply to all emission units, regardless of their category or emission rates. These conditions are federally enforceable. Compliance with these requirements is discussed in Section 3. In case of a discrepancy between the wording of a condition and the applicable federal or APCD rule(s), the wording of the rule shall control.

### Section 9.B Generic Permit Conditions

Number	Title
B.1	Circumvention (Rule 301).
B.2	Visible Emissions (Rule 302).
B.3	Nuisance (Rule 303).
B.4	PM Concentration – North Zone (Rule 304).
B.5	Specific Contaminants (Rule 309).
B.6	Odorous Organic Sulfides (Rule 310).
B.7	Sulfur Content of Fuels (Rule 311).
B.8	Organic Solvents (Rule 317).
B.9	Metal Surface Coating Thinner and Reducer (Rule 322).
B.10	Architectural Coatings (Rule 323).
B.11	Disposal and Evaporation of Solvents (Rule 324).
B.12	Surface Coating of Metal Parts and Products (Rule 330).
B.13	Adhesives and Sealants (Rule 353).
B.14	Oil and Natural Gas Production MACT (Subpart HH)
B.15	Proposed MACT Standards (Subpart DDDDD)

- B.1 **Circumvention (Rule 301).** A person shall not build, erect, install, or use any article, machine, equipment or other contrivance, the use of which, without resulting in a reduction in the total release of air contaminants to the atmosphere, reduces or conceals an emission which would otherwise constitute a violation of Division 26 (Air Resources) of the Health and Safety Code of the State of California or of these Rules and Regulations. This Rule shall not apply to cases in which the only violation involved is of Section 41700 of the Health and Safety Code of the State of California, or of APCD Rule 303. *[Re: APCD Rule 301]*
- B.2 **Visible Emissions (Rule 302).** Greka shall not discharge into the atmosphere from any single source of emission any air contaminants for a period or periods aggregating more than three minutes in any one hour which is:
- (a) As dark or darker in shade as that designated as No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines, or
  - (b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subsection B.2(a) above.

- B.3 **Nuisance (Rule 303).** No pollutant emissions from any source at Greka shall create nuisance conditions. No operations shall endanger health, safety or comfort, nor shall they damage any property or business.
- B.4 **PM Concentration - North Zone (Rule 304).** Greka shall not discharge into the atmosphere, from any source, particulate matter in excess of the 0.3 grains/dscf concentration limit listed in Rule 304.
- B.5 **Specific Contaminants (Rule 309).** Greka shall not discharge into the atmosphere from any single source sulfur compounds or combustion contaminants in excess of the applicable standards listed in Sections A and E of Rule 309.
- B.6 **Odorous Organic Sulfides (Rule 310).** Greka shall not discharge into the atmosphere H<sub>2</sub>S and organic sulfides that result in a ground level impact beyond the Greka property boundary in excess of either 0.06 ppmv averaged over 3 minutes and 0.03 ppmv averaged over one hour. *[Re: APCD Rule 310].*
- B.7 **Sulfur Content of Fuels (Rule 311).** Greka shall not burn fuels with a sulfur content in excess of 0.5% (by weight) for liquid fuels and 50 gr/100 scf (calculated as H<sub>2</sub>S) for gaseous fuel. Compliance with this condition shall be based on daily measurement of the sulfur concentration of the fuel calculated as H<sub>2</sub>S at standard conditions and *annual* measurements of the total sulfur content of fuel. Under a County Land Use permit, Greka must keep the gas pipeline fuel S level below 29 ppmvd; to comply with this restriction. *[Re: APCD ATC/PTO 9412]*
- B.8 **Organic Solvents (Rule 317).** Greka shall comply with the emission standards listed in Section B of Rule 317. Compliance with this condition shall be based on Greka's compliance with Condition D.10 of this permit and facility inspections.
- B.9 **Metal Surface Coating Thinner and Reducer (Rule 322).** The use of photochemically reactive solvents as thinners or reducers in metal surface coatings is prohibited. Compliance with this condition shall be based on Greka compliance with Condition D.10 of this permit and facility inspections.
- B.10 **Architectural Coatings (Rule 323).** Greka shall comply with the coating ROC content and handling standards listed in Section D of Rule 323 as well as the Administrative requirements listed in Section F of Rule 323. Compliance with this condition shall be based on Greka's compliance with Condition D.10 of this permit and facility inspections.
- B.11 **Disposal and Evaporation of Solvents (Rule 324).** Greka shall not dispose through atmospheric evaporation of more than one and a half gallons of any photochemically reactive solvent per day. Compliance with this condition shall be based on Greka's compliance with Condition D.10 of this permit and facility inspections.
- B.12 **Surface Coating of Metal Parts and Products (Rule 330).** Greka shall not apply any coating or specify the use of any coating on any metal part or product subject to the provisions of this Rule which, as applied, emits or may emit reactive organic compounds into

the atmosphere in excess of the limits identified in section D of this rule. *[Re: APCD Rule 330]*

**B.13 Adhesives and Sealants (Rule 353).** The permittee shall not use adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers, or any other primers, unless the permittee complies with the following:

- (a) Such materials used are purchased or supplied by the manufacturer or suppliers in containers of 16 fluid ounces or less; or alternately
- (b) When the permittee uses such materials from containers larger than 16 fluid ounces and the materials are not exempt by Rule 353, Section B.1, the total reactive organic compound emissions from the use of such material shall not exceed 200 pounds per year unless the substances used and the operational methods comply with Sections D, E, F, G, and H of Rule 353. Compliance shall be demonstrated by recordkeeping in accordance with Section B.2 and/or Section O of Rule 353. *[Re: APCD Rule 353]*

**B.14 Oil and Natural Gas Production MACT.** Greka shall comply with the following General Recordkeeping (40 CFR 63.10(b)(2)) MACT requirements:

- (a) Greka shall maintain records of the occurrence and duration of each startup, shutdown, or malfunction of operation;
- (b) Actions taken during periods of startup, shutdown, and malfunction when different from the procedures specified in Greka's startup, shutdown, and malfunction plan (SSMP);
- (c) All information necessary to demonstrate conformance with Greka's SSMP when all actions taken during periods of startup, shutdown, and malfunction are consistent with the procedures specified in such plan;
- (d) All required measurements needed to demonstrate compliance with a relevant standard, including all records with respect to applicability determination, and black oil documentation per 40 CFR 63.760;
- (e) Any information demonstrating whether a source is meeting the requirements for a waiver of record-keeping or reporting requirements under this condition.
- (f) Greka shall maintain records of SSM events indicating whether or not the SSMP was followed;
- (g) Greka shall submit a semi-annual startup, shutdown, and malfunction report as specified in 40 CFR 63.10.d.5. The report shall be due by July 30<sup>th</sup> and January 30<sup>th</sup>. *[Re: 40 CFR 63, Subpart HH]*

## 9.2 9.C Requirements and Equipment Specific Conditions

This section includes non generic federally-enforceable conditions, including emissions and operations limits. Monitoring, record keeping and reporting conditions are included in this section for each specific equipment group. This section may also contain other non-generic conditions.

### Section 9.C Generic Permit Conditions

Number	Title
C.1	External Combustion Equipment – Boiler, Heater Treaters, and FWKO
C.2	Fugitive Hydrocarbon Emission Components
C.3	Storage Tanks
C.4	Sumps, Cellars, and Pits
C.5	Loading Racks
C.6	Facility Throughput Limitations
C.7	Recordkeeping
C.8	Semi-Annual Monitoring/Compliance Verification Reports
C.9	Fuel Gas Sulfur and HHV Monitoring Plan
C.10	Sampling Provisions for Non-Operational Equipment/Activities

- C.1 **External Combustion Equipment - Boiler, Heater Treaters, and Free Water Knockout/De-sander Vessel.** The following equipment items are included in this emissions unit category:

**Table C.1-1 External Combustion Equipment List**

APCD Device ID #	Name and Brief Description
4080	Boiler, field gas-fired: Petrotherm, 0.6 MMBtu/hr heat input
4077	Heater Treater, field gas-fired: Natco, 1.5 MMBtu/hr heat input
4078	Test Treater, field gas-fired: National, 0.6 MMBtu/hr heat input
4079	Free water knockout/de-sander, field gas-fired: 1 MMBtu/hr heat input

- (a) Operational Limits: The equipment listed in the Table C.1-1 must be properly maintained in accordance with the equipment manufacturer's/operator's maintenance manual to minimize combustion emissions. The following additional operational limits apply:
- (i) *Gaseous Fuel Sulfur Limit*. All units listed in Table C.1-1 shall be fired on field-gas. The concentration of sulfur compounds (calculated as H<sub>2</sub>S at standard conditions, 60°F and 14.7 psia) in fuel burned in these units shall not exceed 50 grains per 100 cubic feet (796 ppmvd).

- (ii) *Combustion Units.* The hourly, daily and annual heat input limits to the combustion units shall not exceed the values listed in Table C.1-2 below. These limits are based on the design rating of the units and the annual heat input value as listed in the permit application. Unless otherwise designated by the Control Officer, the fuel heat content of field gas for determining compliance equals 1,050 Btu/scf. [Re: ATC 6136]

**Table C.1-2 Heat Input Limits**

Combustion Unit	MMBtu/hr	MMBtu/day	MMBtu/yr
Boiler	0.60	14.40	5,256.00
Heater Treater	1.50	36.0	13,140
Test Treater	0.6	14.40	5,256.0
Free water knockout	1.0	24.00	8,760.0

- (b) Monitoring: The following monitoring conditions apply to the external combustion equipment listed in Table C.1-1:
- (i) *Fuel Meters.* Each unit listed in Table C.1-1 shall be equipped with a fuel meter (totalizer) to measure the total cubic feet (scf) delivered to the engine. The fuel meter shall be accurate to within five percent (5%) of the full scale reading. The fuel meter/gauge shall be calibrated in accordance with the fuel meters manufacturer's procedures. The calibrations shall be performed as specified by the fuel meter manufacturer, but no later than the date of the next required emissions source test.
  - (ii) *Fuel Gas Sulfur Data.* Greka shall measure the total sulfur content of the gaseous fuel annually in accordance with ASTM-D1072 and an APCD approved *Fuel Gas Sulfur Reporting Plan*. Greka shall measure the hydrogen sulfide (H<sub>2</sub>S) content of the gaseous fuel monthly via sorbent tube method and an APCD approved *Fuel Gas Sulfur and HHV Reporting Plan*.
  - (iii) *Fuel Gas High Heating Value.* Greka shall measure the higher heating value of the fuel gas on a quarterly basis using APCD approved methods and per an APCD approved *Fuel Gas Sulfur and HHV Reporting Plan*.
- (a) *Fuel Use Monitoring and Process Monitor Calibration and Maintenance Plan.* The APCD-approved *Fuel Use Monitoring and Process Monitor Calibration and Maintenance Plan* for the UCB Lease in the Greka Cat Canyon Stationary Source shall be implemented for the life of the project. The Plan, and any subsequent APCD approved revisions, is incorporated by reference as an enforceable part of this permit. Within sixty (60) days of the issuance of this permit, Greka shall submit for APCD approval a revised *Fuel Use Monitoring and Process Monitor Calibration and Maintenance Plan for the South Cat Canyon stationary source*.

- (c) **Recordkeeping:** The following record keeping conditions apply to the external combustion equipment items listed above:
- (i) *Sulfur Content.* The monthly measured hydrogen sulfide content and the annually measured total sulfur content, both in units of ppmvd, of the gaseous fuel burned on the lease from each permitted combustion unit.
  - (ii) *High Heating Value.* The quarterly high heating value and specific gravity of the fuel gas.
  - (iii) *Fuel Gas Use.* The total amount of fuel gas combusted in each unit listed in Table C.1-1 shall be recorded on a daily, quarterly, and annual basis in units of standard cubic feet and million Btus (x.xxx format).
- (d) **Reporting:** On a semi-annual basis, a report detailing the previous six month's activities shall be provided to the APCD. The report must list all data required by the *Semi-Annual Compliance Verification Reports* condition of this permit. [Re: APCD Rules 311 and 1303, 40 CFR 70.6]

**C.2 Fugitive Hydrocarbon Emissions Components.** The following equipment are included in this emissions unit category:

**Table C.2-1 Fugitive Hydrocarbon Emission Component Equipment List**

ID #	Name
	<i>Gas/Light Liquid Service Components</i>
4083	Valves – Bellows Seal
4083	Valves – Accessible/Inaccessible
4083	Valves – Unsafe
4083	Valves - LEV Accessible/Inaccessible
4083	Valves - LEV Unsafe
4083	Flanges/Connections – Accessible/Inaccessible
4083	Flanges/Connections – Unsafe
4083	Compressor Seals – To Atm
4083	Compressor Seals – To VRU
4083	Relief Valves – To Atm
4083	Relief Valves – To VRU
4083	Pump Seals – Tandem
4083	Pump Seals – Single
4083	Exempt
	<i>Oil Service Components</i>
4083	Valves – Bellows Seal
4083	Valves – Accessible/Inaccessible
4083	Valves – Unsafe
4083	Valves - LEV Accessible/Inaccessible
4083	Valves - LEV Unsafe
4083	Flanges/Connections – Accessible/Inaccessible
4083	Flanges/Connections – Unsafe

ID #	Name
4083	Compressor Seals – To Atm
4083	Compressor Seals – To VRU
4083	Relief Valves – To Atm
4083	Relief Valves – To VRU
4083	Pump Seals – Tandem
4083	Pump Seals – Single
4083	Exempt
4088	Wellheads — located at all six (6) well units, 3 equipped with cellars

- (a) Operational Limits: Operation of the equipment listed in Table C.2-1 above and the gas gathering system shall conform to the requirements listed in APCD Rule 331.D and E. Compliance with these limits shall be assessed through compliance with the monitoring, record-keeping and reporting (MRR) conditions listed in this permit. In addition Greka shall meet the following:
- (i) *VRS Use*: The vapor recovery system (VRS) and the gas collection system (GCS) shall be in operation when the equipment items at the facility connected to these systems are in use. These systems system includes piping, valves, and flanges associated with the systems. The systems shall be maintained and operated to minimize the release of emissions from all systems, including pressure relief valves and gauge hatches.
- (1) *Rule 331 I&M Program*. The APCD-approved I&M Plan for the UCB Lease in the Greka Cat Canyon Stationary Source shall be implemented for the life of the project. The Plan, and any subsequent APCD approved revisions, is incorporated by reference as an enforceable part of this permit. Within sixty (60) days of the issuance of this permit, Greka shall submit for APCD approval, a revised Fugitive I&M Plan for the South Cat Canyon Stationary source.
- (ii) *Rule 331 Exemption Request*. If Greka wishes to maintain the Rule 331 B.2.c exemption from the MRR requirements of Rule 331, then Greka shall submit an exemption request to the APCD which shall include a current inventory of all 1/2" or smaller stainless steel tube fittings and a written statement certifying under penalty of perjury that all one-half inch and smaller stainless steel tube fittings have been inspected in accordance with the requirements of Rule 331 Section H.1 and found to be leak-free.
- (b) Monitoring: The equipment listed in this section are subject to all the monitoring requirements listed in APCD Rule 331.F. The test methods in Rule 331.H shall be used, when applicable.
- (c) Recordkeeping: All inspection and repair records shall be retained at the source for a minimum of five years. The equipment listed in this section are subject to all the recordkeeping requirements listed in APCD Rule 331.G. These include:

- (i) *Rule 331 I&M Log.* Greka shall record in a log the following:
- (1) a record of leaking components found (including name, location, type of component, date of leak detection, the ppmv reading, date of repair attempt, method of detection, date of re-inspection and ppmv reading after leak is repaired);
  - (2) a record of the total components inspected and the total number and percentage found leaking by component type;
  - (3) a record of leaks from critical components;
  - (4) a record of leaks from components that incur five repair actions within a continuous 12-month period; and,
  - (5) a record of component repair actions including dates of component re-inspections.
- (d) Reporting: The equipment listed in this section are subject to all the reporting requirements listed in APCD Rule 331.G. On a semi-annual basis, a report detailing the previous six month's activities shall be provided to the APCD. The report must list all data required by the *Semi-Annual Compliance Verification Reports* condition of this permit. [Re: APCD Rules 331 and 1303, 40 CFR 70.6]

C.3 **Storage Tanks.** The following equipment items are included in this emissions category:

**Table C.3-1 Storage Tank Equipment List**

APCD ID #	Name, Plant ID No., if applicable, capacity, dimensions, process rate
4076	Crude shipping tank; Plant ID # 9655, 1,000 barrels, 21.5' diameter by 16' high, cone roof with a ht. of 0.7' above the shell, equipped with P-R valve
5277	Crude shipping tank, Plant ID # 9656; 1,000 barrels, 29.5' diameter by 16' high, cone roof with a ht. of 0.7' above the shell, equipped with P-R valve
100350, 100443	Portable Greka-owned tanks (2); <i>each</i> 500 bbls., 35' by 8' by 8' high, welded, flat roof, gray

- (a) Emission Limits: Mass emissions from the portable tanks shall not exceed the emission limits listed for these items in 5.2-3 and Table 5.2-4 of this permit. Compliance with these limits shall be assessed through compliance with the monitoring, record-keeping and reporting (MRR) conditions listed in this permit. [Re: APCD ATC 10174]
- (b) Operational Limits: Operation of the equipment listed in Table C.3-1 above shall conform to the requirements listed in APCD Rule 325, Rule 343, and Rule 346. Compliance with these limits shall be assessed through compliance with the monitoring, record-keeping and reporting (MRR) conditions listed in this permit. In addition Greka shall meet the following:
- (i) *Process Throughput*. UCB Lease oil production shall be limited to 150 barrels of oil (dry) per day and 54,750 barrels of oil (dry) per year.

- (ii) *Portable Tanks Process Throughput.* Crude oil (dry) throughput for each of the portable tanks shall not exceed 100 barrels/day and 36,500 barrels/year. These two tanks are permitted to operate anywhere within the Greka South Cat Canyon stationary source. They are subject to the recordkeeping requirements in condition 9.C.3 (d)(iii) below, as well as, the following:
    - (a) the portable tanks listed above in Table C.3-1 are the only portable tanks permitted for use on the stationary source. Any other portable tanks brought onsite are subject to permit and would require submittal of an ATC application or otherwise quality for a permit exemption.
  - (iii) *Oil Tank ROC Emissions Control.* The vapor recovery system shall be connected to each stationary tank and operating during production or processing (including storage, holding or placement) of petroleum and petroleum related products and shall meet the requirement of Rule 325. The systems include all associated piping, valves, and flanges. The systems shall be maintained and operated properly including a leak-free mode of operation and shall achieve a vapor removal efficiency of 90% or greater. [Re: APCD ATC 6677]
  - (iv) *Portable Tanks ROC Emissions Control.* The vapor control requirements of Rule 325.D.1 shall apply to these tanks unless a tank meets each of the conditions listed in 325.B.1.c.
  - (v) *Degassing/Purging of Tanks Containing Sulfur Compounds.* The stationary tanks/vessels listed above are used to store organic liquids containing odorous sulfur compounds; hence, these vessels shall be purged or degassed in a manner consistent with APCD Rule 343, and per an APCD-approved plan.(April 2005).
  - (vi) *Notification of Operation.* As of the date of final issuance of this Part 70 PTO/APCD PTO, there are no crude oil shipping tanks listed in Table C.3-1 that are currently operating. Greka must notify the APCD of their intent to begin operation of any tank listed in Table C.3-1 prior to beginning operation of the tank(s). Upon notification, Greka must schedule an APCD inspection of the tank(s) to insure that the vapor recovery system(s) are intact and operational prior to the introduction of oil/fluids into the tank(s).
- (c) Monitoring: Monitoring requirements for the equipment listed above are, as follows:
- (i) The volume of dry oil (bbl) processed through the four oil storage tanks listed in Table C.3-1 each month and the number of days during that month that oil was processed through each oil storage tank identified in Table C.3-1.
  - (ii) For each tank subject to APCD Rule 325 based on the required analysis in Section G.2, Greka shall visually inspect the tank roof, internal floating cover, and its closures/seals at least once every five (5) years, and shall perform a complete inspection of any roof or cover whenever the tank is emptied for non-operational reasons, whichever is more frequent.

- (iii) For each tank subject to APCD Rule 343, Greka shall maintain a record of all degassing operations per APCD Rule 343 Section F, which includes the following:
  - (1) The date of degassing
  - (2) The tanks degassed
  - (3) The emission reduction method used
  - (4) Documentation generated from monitoring the degassing process
- (d) Recordkeeping: The records required below shall be maintained by the permittee for a minimum period of five (5) calendar years and shall be made available to the APCD personnel upon request.
  - (i) Greka shall record in a log the monthly and annual volumes of dry oil production and the actual number of days in production per month. The daily limit is based on actual days of operation per month.
  - (ii) The following records required to be maintained per APCD Rules 325, Section F (Recordkeeping):
    - (1) The type of liquid in each tank
    - (2) The maximum vapor pressure of the liquid in the tank
    - (3) The results of the inspections required by Section H of Rule 325
    - (4) The API gravity of the oil in the tank
  - (iii) Greka shall record in a log each relocation of the portable tanks within the South Cat Canyon stationary source, as well as, the departure and return to the stationary source. Within 14 days of the issuance of this permit, Greka shall notify the APCD, in writing, of the current location of these tanks. Greka shall record the following information for all relocations of these tanks: the date, location and whether vapor recovery is required.
  - (iv) The records required per APCD Rule 343, as identified in Condition 9.C.3.c.iii shall be maintained in a readily accessible location for at least five (5) years.
- (e) Reporting: On a semi-annual basis, a report detailing the previous six month's activities shall be provided to the APCD. The report shall list all the data required by the Semi-Annual Monitoring/Compliance Verification Reports condition of this permit.  
*[Re: APCD Rules 325, 343 and 1303, APCD ATC's 6677 and 10174, 40 CFR 70.6.(a)(3)]*

C.4 **Sumps/Cellars/Pits.** The following equipment are included in this emissions category:

**Table C.4-1 Sumps/Cellars/Pits Equipment List**

APCD ID No.	Name
4087	Well cellars; 3 in no., one w/6' dia., two w/8' dia., total area = 128.8 sq.ft.
4086	Waste water sump, #2 ; tertiary service, open, 300 sq.ft.,541 bbl
4085	Waste water sump, #1 ; secondary service, open, 900 sq.ft.,1,444 bbl

- (a) **Operational Limits:** All process operations from the cellar units listed in Table C.4-1 above shall meet the requirements of APCD Rule 344, Section D. Compliance with these operational limits shall be assessed through compliance with the MRR conditions listed in this permit. *[Re: APCD PTO 9668]*
- (b) **Monitoring:** The equipment listed in this section is subject to all applicable monitoring requirements of APCD Rule 344.F. The test methods outlined in APCD Rule 344.I shall be used, when applicable.
- (i) For well cellars, Greka shall comply with the requirements of Rule 344.D, at a minimum. Also, Greka shall inspect the well cellars to ensure that the liquid depth and the oil/petroleum depth do not exceed the following:
- (1) Liquid depth shall not exceed 50 percent of the depth of the well cellar
  - (2) Oil depth shall not exceed 2 inches unless the owner/operator has discovered the condition and the cellar is pumped within 7 days of discovery (if the cellar is inaccessible due to muddy conditions, it shall be pumped as soon as it is accessible.
- (c) **Recordkeeping:** The cellar units are subject to all applicable record-keeping requirements listed in APCD Rule 344.G. Specifically, Greka shall record, for each detection, the following information relating to detection of conditions which require pumping of a well cellar pursuant to Rule 344.D.3.c:
- (i) the date of the detection
  - (ii) the name of the person and company performing the test or inspection
  - (iii) the date and time the well cellar is pumped
- (d) **Reporting:** On a semi-annual basis, a report detailing the previous six month's activities shall be provided to the APCD. The report shall list all the data required by the Semi-Annual Monitoring/Compliance Verification Reports condition listed below. *[Ref: APCD Rules 344 and 1303, 40 CFR 70.6]*

C.5 **Loading Racks.** The following equipment are included in this emissions category:

**Table C.5-1 Loading Rack Equipment List**

APCD ID #	Description, petroleum liquid loaded, loading method, process rate
4089	Crude oil loading rack; 2,000 barrels/day, 54,750 bbl/yr, connected to VRS
100351 100444	Crude oil loading racks (2), associated with the operation of two Baker tanks in this permit; 500 barrels/day, 36,500 bbl/yr, connected to VRS

- (a) Emission Limits: Mass emissions from the *two loading racks (ID #100351 & 100444)* shall not exceed the emission limit listed for these items in Tables 5.2-3 and 5.2-4 of this permit. Compliance with these limits shall be assessed through compliance with the monitoring, record-keeping and reporting (MRR) conditions listed in this permit. *[Re: APCD ATC 10174]*
- (b) Operational Limits: All process operations from the equipment listed in this section shall meet the requirements of APCD Rule 346, Sections D, E, F and G. Compliance with these limits shall be assessed through compliance with the monitoring, record-keeping and reporting conditions in this permit. *[Re: APCD ATC 10174]*
- (i) Crude oil loading shall vent displaced vapors to the VRS and shall be performed using a submerged fill pipe or bottom loaded into trucks.
- (ii) Greka shall restrict the loading rack operations to 2,000 bbl/day and 54,750 bbl/year of dry oil loading for the stationary rack.
- (iii) Greka shall restrict the Baker Tank loading rack operations to 500 bbl/day and 36,500 bbl/year for each of the Baker Tank loading racks (ID # 100351, 100444). The portable tank loading racks may operate anywhere within the South Greka Cat Canyon stationary source.
- (c) Monitoring: The equipment listed in this section is subject to all the monitoring requirements of APCD Rule 346.F. The test methods outlined in APCD Rule 346.H shall be used.
- (d) Recordkeeping: The equipment listed in this section is subject to all the record-keeping requirements listed in APCD Rule 346.G. In addition, Greka shall record the volumes and dates of shipments from the loading rack and the total number of loads trucked daily.
- (e) Reporting: On a semi-annual basis, a report detailing the previous six month's activities shall be provided to the APCD. The report shall list all the data required by the Semi-Annual Monitoring/Compliance Verification Reports condition of this permit. *[Re: APCD Rules 346 and 1303, 40 CFR 70.6 and ATC 10174]*

C.6 **Facility Throughput Limitations.** UCB Lease oil production shall be limited to 150 barrels of oil (dry) per day and 54,750 barrels of oil (dry) per year. Greka shall record in a log the monthly and annual volumes of dry oil production and the actual number of days in

production per month. The daily limit is based on actual days of operation per month. [Re: ATC 6677]

- C.7 **Recordkeeping.** All records and logs required by this permit and any applicable District, state or federal rule or regulation shall be maintained for a minimum of five calendar years from the date of information collection or log entry at the lease. These records or logs shall be readily accessible and be made available to APCD upon request. [Re: APCD Rule 1303, 40 CFR 70.6]
- C.8 **Semi-Annual Monitoring/Compliance Verification Reports.** Twice a year, Greka shall submit a compliance verification report to the APCD. Each report shall document compliance with all permit, rule or other statutory requirements during the prior two calendar quarters. The first report shall cover calendar quarters 1 and 2 (January through June) and the second report shall cover calendar quarters 3 and 4 (July through December). The reports shall be submitted by March 1<sup>st</sup> and September 1<sup>st</sup> each year. Each report shall contain information necessary to verify compliance with the emission limits and other requirements of this permit and shall document compliance separately for each calendar quarter. These reports shall be in a format approved by the APCD. Compliance with all limitations shall be documented in the submittals. All logs and other basic source data not included in the report shall be made available to the APCD upon request. The second report shall also include an annual report for the prior four quarters. Pursuant to Rule 212, a completed *APCD Annual Emissions Inventory* questionnaire should be included in the annual report or submitted electronically via the APCD website. Greka may use the Compliance Verification Report in lieu of the Emissions Inventory questionnaire if the format of the CVR is acceptable to the APCD's Emissions Inventory Group and if Greka submits a statement signed by a responsible official stating that the information and calculations of emissions presented in the CVR are accurate and complete to best knowledge of the individual certifying the statement. The report shall include the following information:
- (a) *External Combustion Units - Heater Treaters, boiler and free water knockout/desander.*
    - (i) The monthly measured sulfur concentration of the fuel gas calculated as H<sub>2</sub>S.
    - (ii) The annually measured total sulfur content of fuel gas consumed at each combustion unit (*each annual data will suffice for both reports*).
    - (iii) The quarterly measured high heating value (Btu/scf).
    - (iv) The total volume of gaseous fuel combusted in each combustion unit, on a daily, monthly, and annual basis in units of standard cubic feet and million BTUs.
  - (b) *Fugitive Hydrocarbons.* Rule 331 fugitive hydrocarbon I&M program data (quarterly data):
    - (i) Inspection summary.
    - (ii) Record of leaking components.
    - (iii) Record of leaks from critical components.

- (iv) Record of leaks from components that incur five repair actions within a continuous 12-month period.
  - (v) Record of component repair actions including dates of component re-inspections.
  - (vi) An updated FHC I&M inventory due to change in component list or diagrams.
- (c) *Storage Tanks*
- (i) The volume of dry oil (bbl) processed through each tank each month and the number of days during that month that oil was processed through each tank;
  - (ii) For all degassing events subject to APCD Rule 343, the volume purged, characteristics of the vapor purged, and the control device/method used;
  - (iii) For each tank listed in Table C.3-1, a summary annual report consisting of the following:
    - (1) The type of liquid in each tank;
    - (2) The maximum vapor pressure of the tank content under operating conditions;
    - (3) The date each tank was degassed.
- (d) *Sumps/Cellars/Pits.*
- (i) The following information, for each detection of conditions which resulted in a pumping of any well cellar:
    - (1) The date of the detection,
    - (2) The name of the person and company performing the test or inspection,
    - (3) The date and time the well cellar was pumped.
- (e) *Loading Racks.*
- (i) The volumes (in barrels) of crude oil shipped each month;
  - (ii) The volumes (in barrels) of diluent loaded each month;
  - (iii) Total volume of crude oil trucked/shipped daily, based on number of days of trucking/shipping operations per month;
  - (iv) Total volume of diluent trucked/shipped daily, based on number of days of trucking/shipping operations per month; and
  - (v) A summary description of any leak or malfunction of the vapor recovery or overfill prevention system found during any required monitoring operation.
- (f) *Facility Throughput Limitations.*
- (i) A summary of each and every occurrence of non-compliance with the provisions of this permit, APCD rules, and any other applicable air quality requirement.

- (ii) On an annual basis, the ROC and/or NO<sub>x</sub> emissions from all permit exempt activities.

C.9 **Fuel Gas Sulfur and HHV Monitoring Plan.** Greka shall abide by an APCD approved Fuel Gas Sulfur and HHV Monitoring Plan. Greka shall submit a *Fuel Gas Sulfur Reporting Plan* for APCD approval within ninety (90) days of final permit issuance. The plan shall include the following elements:

- (a) *Unit Description:* A brief description of the combustion units permitted to operate using fuel gas in the Greka Cat Canyon stationary source, including the APCD ID#, and the purpose for operation in the source.
- (b) *Fuel Monitoring Devices:* A description of the fuel gas sulfur and HHV monitoring devices in place on each permitted unit. A diagram identifying the fuel gas lines by lease with the sampling location for each permitted combustion unit.
- (c) *Fuel Sampling Procedures:* A description of the procedures in place for collecting fuel gas samples for total reduced sulfur (TRS) and H<sub>2</sub>S concentration, and the High Heating Value (HHV) of the fuel.
- (d) *Recordkeeping:* Monthly and annual records shall be kept onsite for a minimum of five (5) years and will be made available to the APCD upon request.
  - (i) The monthly records of fuel gas sulfur content and HHV will be submitted in the semi-annual and annual compliance verification report (CVR). The CVR will include the results of total reduced sulfur concentration as measured and recorded annually, the results of HHV as measured as recorded quarterly, and the results of H<sub>2</sub>S concentration as measured and recorded monthly for each permitted combustion unit.

Greka may submit a revision to the *Fuel Gas Sulfur and HHV Monitoring Plan* at any time to address sampling locations. Revisions to this plan must be approved by the APCD prior to implementing any modifications to sampling frequency, location, or sampling methodology.

C.10 **Sampling Provisions for Non-Operational Equipment/Activities.** Greka shall complete all sampling/analysis required in section 9.C or 9.D conditions at the designated frequencies (e.g., daily, weekly, monthly, quarterly, and/or annual) except under circumstances when equipment subject to sampling is non-operational, as described below:

- (a) *Equipment currently in extended shut-down mode.* For any permitted equipment that has been shut-down for twelve or more consecutive months and whose operation is not prevented by conditions contained within this permit, Greka shall not be required to complete the required sampling and analysis while the equipment remains shut-down. Within 30 days of issuance of this permit, Greka shall submit a written list of all equipment/activities (by facility permit) subject to sampling that have been shut-down for at least 12 consecutive months, along with monthly records documenting the non-operational status of the equipment. Prior to startup of a permitted equipment unit that has been shutdown for twelve (12) or more consecutive months, Greka shall submit a

written notification of the projected startup date. Upon start-up, Greka shall resume the required sampling and analysis at the frequency designated in this permit.

- (b) *Planned equipment shut-downs.* For planned shut-downs of permitted equipment, Greka shall complete the sampling/analyses required before the unit is shutdown. For planned shut-downs of equipment/activities of duration less than the sampling frequency defined in this permit for that unit, Greka must complete the required sampling. If the actual shut-down duration is for a period greater than the sampling frequency defined in this permit for that unit, then Greka does not have to complete the sampling for the unit while shut-down. Upon equipment start-up, Greka shall resume the required sampling and analysis at the frequency designated in this permit. Prior to any planned shut-downs of units subject to sampling, Greka shall submit a written shutdown notification to the APCD which identifies the unit(s) to be shutdown and the scheduled period (dates) of the shutdown.

### 9.3 9.D APCD-Only Conditions

The following section lists permit conditions that are not federally enforceable (i.e., not enforceable by the USEPA or the public). However, these conditions are enforceable by the APCD and the State of California. These conditions have been determined as being necessary to ensure that operation of the facility complies with all applicable local and state air quality rules, regulations and laws. Failure to comply with any of these conditions shall be a violation of APCD Rule 206, this permit, as well as any applicable section of the California Health & Safety Code.

#### Section 9.D APCD-Only Conditions

Number	Title
D.1	Consistency with Analysis
D.2	Equipment Maintenance
D.3	Compliance
D.4	Severability
D.5	Conflict Between Permits
D.6	Access to Records and Facilities
D.7	Odorous Organic Sulfides (Rule 310)
D.8	Mass Emission Limitations
D.9	Storage Tanks
D.10	Solvent Usage
D.11	Process Stream Sampling and Analysis
D.12	Permitted Equipment
D.13	Annual Compliance Reporting

- D.1 **Consistency with Analysis.** Operation under this permit shall be conducted consistent with all data, specifications and assumptions included with the application and supplements thereof (as

documented in the APCD's project file) and the APCD's analyses under which this permit is issued as documented in the Permit Analyses prepared for and issued with the permit.

- D.2 **Equipment Maintenance.** All equipment permitted herein shall be properly maintained and kept in good working condition in accordance with the equipment manufacturer specifications at all times.
- D.3 **Compliance.** Nothing contained within this permit shall be construed as allowing the violation of any local, state, or federal rules, regulations, air quality standards or increments.
- D.4 **Severability.** In the event that any condition herein is determined to be invalid, all other conditions shall remain in force. *[Re: APCD Rules 103 and 1303.D.1]*
- D.5 **Conflict Between Permits.** The requirements or limits that are more protective of air quality shall apply if any conflict arises between the requirements and limits of this permit and any other permitting actions associated with the equipment permitted herein.
- D.6 **Access to Records and Facilities.** As to any condition that requires for its effective enforcement the inspection of records or facilities by the APCD or its agents, the permittee shall make such records available or provide access to such facilities upon notice from the APCD. Access shall mean access consistent with California Health and Safety Code Section 41510 and Clean Air Act Section 114A.
- D.7 **Odorous Organic Sulfides (Rule 310).** The permittee shall not discharge into the atmosphere H<sub>2</sub>S and organic sulfides that result in a ground level impact beyond the permitted property boundary in excess of either 0.06 ppmv averaged over 3 minutes and 0.03 ppmv averaged over one hour. *[Re: APCD Rule 310]*
- D.8 **Mass Emission Limitations.** Mass emissions for each equipment item associated with UCB Lease shall not exceed the values listed in Tables 5.2-3 and 5.2-4 of this permit. Emissions for the entire facility shall not exceed the emissions limits, as listed in Table 5.3-1.
- D.9 **External Combustion Units - Permits Required.**
- 1) An ATC/PTO permit shall be obtained prior to installation of any grouping of Rule 360 applicable boilers or hot water heaters whose combined system design heat input rating exceeds 2,000 MMBtu/hr.
  - 2) An ATC permit shall be obtained prior to installation, replacement, or modification of any existing Rule 361 applicable boiler or water heater rated over 2,000 MMBtu/hr.
  - 3) An ATC shall be obtained for any size boiler or water heater if the unit is not fired on natural gas or propane.
- D.10 **Solvent Usage.** Use of solvents for wipe cleaning maintenance and laboratory use shall conform to the requirements of APCD Rules 202, 317 and 324. On an annual basis, Greka shall monitor the following for each solvent used:

- (a) Emission Limits: Mass emissions from the solvent usage shall not exceed the limits listed in Tables 5.2-3 and 5.2-4 of this permit. Compliance shall be based on the recordkeeping and reporting requirements of this permit. For short-term emissions, compliance shall be based on monthly averages.
- (b) Operational Limits: Use of solvents for cleaning, degreasing, thinning and reducing shall conform to the requirements of APCD Rules 317 and 324. Compliance with these rules shall be assessed through compliance with the monitoring, recordkeeping and reporting conditions in this permit and facility inspections. In addition, Greka shall comply with the following:
- (i) *Containers*. Vessels or containers used for storing materials containing organic solvents shall be kept closed unless adding to or removing material from the vessel or container.
  - (ii) *Materials*. All materials that have been soaked with cleanup solvents shall be stored, when not in use, in closed containers that are equipped with tight seals.
  - (iii) *Solvent Leaks*. Solvent leaks shall be minimized to the maximum extent feasible or the solvent shall be removed to a sealed container and the equipment taken out of service until repaired. A solvent leak is defined as either the flow of three liquid drops per minute or a discernable continuous flow of solvent.
  - (iv) *Solvent Reclamation Plan*. Greka may submit a *Solvent Reclamation Plan* that describes the proper disposal of any reclaimed solvent. All solvent disposed of pursuant to the APCD approved Plan will not be assumed to have evaporated as emissions into the air and, therefore, will not be counted as emissions from the source. The Plan shall detail all procedures used for collecting, storing and transporting the reclaimed solvent. Further, the ultimate fate of these reclaimed solvents must be stated in the Plan.
- (c) Monitoring: The monitoring shall meet the requirements of Rule 202.U.3 and be adequate to demonstrate compliance with Rule 202.N threshold.
- (d) Recordkeeping: All monitoring data shall be recorded in a log. Any product sheets (MSDS or equivalent) detailing the constituents of all solvents shall be maintained in a readily accessible location on the facility. Greka shall record the amount used in gallons per month, the percentage of ROC by weight (as applied), the solvent density, and whether the solvent is photo-chemically reactive. Greka shall also record the amount of surface coating used in gallons per month and the percentage of ROC by weight of the surface coating. Greka shall record in a log the amount of solvent reclaimed for APCD-approved disposal according to the APCD-approved *Solvent Reclamation Plan*.
- (e) Reporting: On an annual basis, a report detailing the previous twelve month's activities shall be provided to the APCD. The report shall list all the data required by the Annual Compliance Report condition D.13.

D.11 **Process Stream Sampling and Analysis.** Greka shall sample analyze the process streams listed in Section 4.9.2 of this permit according to the methods and frequency detailed in that Section. All process stream samples shall be taken according to APCD approved ASTM methods and must follow traceable chain of custody procedures. Compliance with this condition shall be assessed through compliance with the monitoring, record-keeping and reporting (MRR) conditions listed in this permit.

D.12 **Permitted Equipment.** Only those equipment items listed in Attachment 10.5 are covered by the requirements of this permit and District Rule 201.E.2. *[Re: APCD Rule 201]*

D.13 **Annual Compliance Reporting.** In addition to its federally required semi-annual reporting, Greka shall also submit an annual report to the APCD, by March 1<sup>st</sup> of the following year containing the information listed below. These reports shall be in a format approved by the APCD. All logs and other basic source data not included in the report shall be available to the APCD upon request. Except where noted, the annual compliance report shall include monthly summaries of the following information:

(a) *Storage Tanks*

- (i) The API Gravity of the crude oil and the true vapor pressure (TVP) of the crude oil at the maximum expected temperature (180°F) as defined in 9.D.9.b.i, as measured per Rule 325.G.2 and recorded. Each tank temperature shall also be recorded while measuring the vapor pressure per Rule 325.G.2.

(b) *Solvent Usage*

- (i) The volume (in gallons) of each non-photo-chemically reactive solvent used each month;
- (ii) The density of each such solvent and the percentage of ROC by weight in each solvent;
- (iii) The total weight (in pounds) of all "photo-chemically reactive" (per APCD Rule 102.FF) solvents used each month, and the number of days each month these were used;
- (iv) The volume (in gallons) of surface coating used each month;
- (v) The percentage of ROC by weight of the surface coating used.

(c) *Adhesives and Sealants*

- (i) All records of adhesives and sealants used in the facility including their ROC content, unless all such adhesives or sealants were contained in containers less than 16 ounces in size or all such materials were exempt from Rule 353 requirements pursuant to Rule 353.B.1.

(d) *Mass Emissions*

- (i) The annual emissions (TPY) from each permitted emissions unit for each criteria pollutant
- (ii) The annual emissions (TPY) from each exempt emissions unit for each criteria pollutant
- (iii) The annual emissions (TPY) totaled for each criteria pollutant

(e) *General Reporting Requirements*

- (i) A brief summary of breakdowns and variances reported/obtained per Regulation V along with the excess emissions that accompanied each occurrence.
- (ii) A summary of each use of CARB Certified equipment used at the facility. List the type of equipment used, CARB Registration Number, first date of use and duration of use and an estimate of the emissions generated.
- (iii) A copy of the Rule 202 De Minimis Log for the stationary source.

AIR POLLUTION CONTROL OFFICER

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February 2010

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Date

Notes:

- (a) This permit supersedes all previous “APCD-only” Permits-to-Operate issued for UCB Lease
- (b) Permit Reevaluation Due Date: February 2013

## **10. Attachments**

- 10.1 Emission Calculation Documentation**
- 10.2 Emission Calculation Spreadsheets**
- 10.3 Fee Calculations**
- 10.4 IDS Database Emission Tables**
- 10.5 Equipment List**
- 10.6 Well List**
- 10.7 Greka Comments on Draft Permit / APCD Response**

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## 10.1 Emission Calculation Documentation

### UCB Lease

This attachment contains all relevant emission calculation documentation used for the emission tables in Section 5. Refer to Section 4 for the general equations. The letters A-H refer to Table 5.2-1 and Table 5.2-2.

### Reference A - External Combustion Equipment (Boiler, heater treater etc.)

- The maximum operating schedule is in units of hours
- The gaseous fuel default characteristics are:
  - HHV = 1,050 Btu/scf
  - Fuel S = 796 ppmvd for all equipment
- NO<sub>x</sub>, ROC, CO and PM<sub>10</sub> emission factors are based on those listed in USEPA's AP-42 (*Reference: Air Chief, Version 6.0, October, 1998, Tables 1.4-1 and 1.4-2*). The AP-42 data listed in lb./MMscf units are converted to lb./MMBtu units using a fuel HHV of 1050 Btu/scf. The emission factors are: NO<sub>x</sub> = 0.0980 lb./MMBtu, ROC = 0.0054 lb./MMBtu, CO = 0.0824 lb./MMBtu, and PM<sub>10</sub> = 0.0075 lb./MMBtu.
- SO<sub>2</sub> emission limit (factor) = 0.1362 lb./MMBtu is based on re-conversion of AP-42 data, based on fuel S level of 796 ppmvd (50 grains/100 scf) at UCB Lease.

### Reference B - Fugitive Components (Valves, fittings etc., at the wellheads)

- The maximum operating schedule is in units of hours.
- All safe to monitor components are credited an 80 percent control efficiency
- For existing onshore sources without a detailed component count inventory, the statistical models developed by the CARB/KVB were used. The CARB/KVB Method uses statistical models based on the facility's gas/oil ratio and the number of active wells to determine the emission factor. (see Attachment 10.2)
- APCD Policy and Procedure 6100.060.1996 (*Calculation of Fugitive Hydrocarbon Emissions at Oil and Gas Facilities by the CARB/KVB Method*, July 1996) is used as the basis for implementing the CARB/KVB methodology. (see Attachment 10.2)
- Emission factors from the CARB/KVB Method were also used determining fugitive emissions from wellheads casing (i.e., piping and equipment associated with the underground casing) and from pumps and compressors (see Attachment 10.2)

In order to determine the applicable fugitive hydrocarbon (FHC) emission factors for equipment in a facility, the following definitions are provided specific to this methodology.

1. Gas to Oil Ratio (GOR): The volume ratio of gas to liquid crude oil produced by the facility wells in units of standard cubic feet per day (scfd) of gas to barrel per day (bbl/day) of crude oil.
2. Wells Heads: Well piping and pumping equipment located above the underground oil and gas well casing.

3. Active Oil Wells: All oil and gas producing wells not abandoned (e.g. not plugged with concrete to block the well). Active oil wells do not include wastewater re-injection wells.

To calculate FHC emissions from an oil and gas facility, the CARB/KVB method requires the following data listed in Table 10.1-1. From this data, Facility Model Numbers can be determined from Table 10.1-2.

**Table 10.1-1 Data Required**

Parameter	Units
1. The total gas production from the facility	SCF/day
2. The total dry crude oil production and API gravity of the crude produced by the facility	bbl/day and °API
3. The total gas production divided by the total dry oil produced. (Gas oil Ratio (GOR))	SCF/bbl
4 The number of active oil and gas production wells that are serviced by the facility. Do not count waste water re-injection, or abandoned (plugged) wells	Number of wells
5. The types, quantities and characteristics of the following equipment at the facility:	
5.1 Pumps (facility has them or not)	Yes/no
5.2 Compressors (facility has them or not)	Yes/no

**Table 10.1-2 Facility Model Numbers**

Model #1	Number of wells on the lease is less than 10 and the GOR is less than 500.
Model #2:	Number of wells on the lease is between 10 and 50 and the GOR is less than 500.
Model #3	Number of wells on the lease is greater than 50 and the GOR is less than 500.
Model #4:	Number of wells on the lease is less than 10 and the GOR is greater than or equal to 500.
Model #5:	Number of wells on the lease is between 10 and 50 and the GOR is greater than or equal to 500.
Model #6:	Number of wells on the lease is greater than 50 and the GOR is greater than or equal to 500.

Emission Factors: “Uncontrolled” ROC emission factors are provided in Table 10.1-3 and Table 10.1-4 for valves and fittings based on the lease model number. Table 10.1-5 provides emission factors for wellheads, pumps and compressors. All emission factors listed in Tables 10.1-3 through 10.1-5 are for ROC emission factors. The methane and ethane constituents have been removed. Control efficiencies are provided in Table 10.1-6.

**Table 10.1-3 Valve Emission Factors**

Lease Model	ROC Emission Factor by Service Type (Lb/day-well)*10 <sup>-4</sup>			
	Gas	Liquid	Mixture	Condensate
Model #1	14,171.70	0.982	748.355	0
Model #2	6,807.46	0.971	190.993	0
Model #3	62.177	0.260	154.327	0
Model #4	44,784.90	1.215	303.513	0
Model #5	8,293.50	0.509	334.359	0
Model #6	16,839.20	0.084	239.978	0

**Table 10.1-4 Fitting Emission Factors**

Lease Model	ROC Emission Factor by Service Type (Lb/day-well)*10 <sup>-4</sup>			
	Gas	Liquid	Mixture	Condensate
Model #1	8,483.620	323.495	1,139.750	0.000
Model #2	5,788.960	0.000	302.830	0.000
Model #3	166.743	9.719	496.834	0.099
Model #4	20,399.100	0.001	920.142	0.000
Model #5	17,547.300	29.052	1,847.850	0.000
Model #6	24,890.200	0.000	115.139	0.243

**Table 10.1-5 Emission Factors for Wellheads, Pumps, and Compressors**

Active (Not abandoned) Oil Wells	0.0097 lb-ROC/well-day
If Facility Uses Pumps	0.0028 lb-ROC/well-day
If Facility Uses Compressors	0.0680 lb-ROC/well-day

**Table 10.1-6 Standard Control Efficiency**

Equipment Category	Type of Control	ROC Control Efficiency (% by wt.)
Fugitive components	Fugitive inspection and maintenance program implemented per Rule 331	80

Detailed emission calculations are shown in Attachment Emission Calculation Spreadsheets

Reference C -- Storage Tanks

- The maximum operating schedule is in units of hours.
- The hourly/daily/annual emissions scenario is based on the following assumptions:
  - Maximum True vapor pressure: 1.2 psia @ 180 °F (this is an estimate only)
  - Crude oil (heated) is stored in steam-heated tanks ( at 180° F).
  - Emissions occur 24 hours/day and 365 days/year.
  - The oil throughput rate for each shipping tank is 150 barrels/day.
- Emission factors are based on the USEPA's AP-42, Section 7 guidelines.

**NOTE – Portable Baker Tanks**

- All Baker tanks are connected to vapor recovery; a control efficiency of 95% is assumed for the units.
- ROC emissions from the Baker tanks is computed following the same procedures as for the shipping tanks at the facility, i.e., the ones outlined in the USEPA's AP-42.
- The oil throughput rate for each Baker Tank is 100 barrels/day (bpd).
- The rectangular cross-section of each Baker tank can be reduced to an equivalent “storage diameter,” using the equation:  $(3.1416/4) * (\text{storage diameter})^2 = (\text{length} * \text{width})$ . The ‘storage diameter’ for the tank is 18.88 ft.; it is not the same as the hydraulic diameter (used for flowing fluids) of the tank which computes to 13.02 ft.

Reference D - Sumps/Cellars

- Maximum operating schedule is in units of hours.
- Emission calculation methodology for sumps, and cellars based on the CARB/KVB report Emissions Characteristics of Crude Oil Production Operations in California (1/83).
- Calculations of cellars and sump emissions are based on surface area of emissions unit as supplied by the applicant.
- All sumps are classified as secondary or tertiary production and heavy oil service.
- All sumps are open to atmosphere; these are not subject to Rule 344. A control efficiency of 0% is assumed for all sumps. The cellars are assigned a control efficiency of 70%.

Reference E - Loading Racks

- The maximum operating schedule is in units of hours;
- The hourly/daily/annual emissions scenario is based on the following assumptions:
- *Main Rack:* Crude oil loading rate is 2,000 bbl./day maximum, 54,750 bbl./yr; emissions are assumed to occur 12.5 hours/day and 342.19 hours/year;
- *Baker Tank Racks:* Crude oil loading rate is 500 bbl./day maximum each, 36500 bbl./yr; emissions are assumed to occur 3.125 hours/day and 228.13 hours/year;
- The loading at the oil loading racks is submerged type with the return vapor going to the VRS unit;
- The “filling/splash loss” does not occur at the oil loading racks since the loading rack is at grade level and submerged type loading takes place.
- Oil loading rack emission factors appear in AP-42, Volume 1, Section 5.

#### Reference F - Solvents

- All solvents not used to thin surface coatings are included in this equipment category.
- Exempt solvent emissions (per Rule 202.U.3) are assumed to be based on 55 gallons of solvent use (maximum expected) at the facility with 6.6 lb. of ROC per gallon of solvent.
- Emissions from exempt solvent use, per Rule 202.N shall not exceed 10 tons per year

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## **10.2 *Emission Calculation Spreadsheets***

**FIXED ROOF TANK CALCULATION (AP-42: Chapter 7 Method)**

Basic Input Data	
liquid {1:G13, 2:G10, 3:G7, 4:C, 5:JP, 6:ker, 7:O2, 8:O6} =	4
liquid TVP =	1.2
if TVP is entered, enter TVP temperature (°F) =	180
tank heated {yes, no} =	yes
if tank is heated, enter temp (°F) =	180
vapor recovery system present? {yes, no} =	yes
is this a wash tank? {yes, no} =	no
will flashing losses occur in this tank? {yes, no} =	yes
breather vent pressure setting range (psi) (def = 0.06):	0.11

Tank Data	
diameter (feet) =	21.5
capacity (enter barrels in first col, gals will compute) =	1,000 42,000
conical or dome roof? {c, d} =	c
shell height (feet) =	16
roof height (def = 1):	0.7
ave liq height (feet):	8
color {1:Spec Al, 2:Dif Al, 3:Lite, 4:Med, 5:Rd, 6:Wh} =	4
condition {1: Good, 2: Poor} =	1

Liquid Data		A	B
maximum daily throughput (bopd) =			150
Ann thrupt (gal): (enter value in Column A if not max PTE)			2.300E+06
RVP (psia):			0.25021
*API gravity =			12

Computed Values	
roof outage <sup>1</sup> (feet):	0.2
vapor space volume <sup>2</sup> (cubic feet):	2.977
turnovers <sup>3</sup> :	54.75
turnover factor <sup>4</sup> :	0.71
paint factor <sup>5</sup> :	0.68
surface temperatures (°R, °F)	
average <sup>6</sup> :	640 180
maximum <sup>7</sup> :	641.25 181.25
minimum <sup>8</sup> :	638.75 178.75
product factor <sup>9</sup> :	0.75
diurnal vapor ranges	
temperature <sup>10</sup> (fahrenheit degrees):	5
vapor pressure <sup>11</sup> (psia):	0.065521
molecular weight <sup>12</sup> (lb/lb-mol):	50
TVP <sup>13</sup> (psia) [adjusted for ave liquid surface temp]:	1.20002
vapor density <sup>14</sup> (lb/cubic foot):	0.008737
vapor expansion factor <sup>15</sup> :	0.005
vapor saturation factor <sup>16</sup> :	0.657234
vented vapor volume (scf/bbl):	8
fraction ROG - flashing losses:	0.308
fraction ROG - evaporative losses:	0.885

Emissions	Uncontrolled ROC emissions			Controlled ROC emissions		
	lb/hr	lb/day	ton/year	lb/hr	lb/day	ton/year
breathing loss <sup>17</sup> =	0.00	0.08	0.01	0.00	0.00	0.00
working loss <sup>18</sup> =	0.18	4.24	0.77	0.01	0.21	0.04
flashing loss <sup>19</sup> =	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS =	0.18	4.32	0.79	0.01	0.22	0.04

Attachment 10.2-1  
 Permit 10258  
 Date: 11/03/09  
 Tank: Crude Storage Tanks (2)  
 Owner: Greka  
 Lease: UCB  
 District: Santa Barbara  
 Version: Tank-2c.xls

Paint Factor Matrix		
paint color	paint condition	
	good	poor
spec alum	0.39	0.49
diff alum	0.60	0.68
lite grey	0.54	0.63
med grey	0.68	0.74
red	0.89	0.91
white	0.17	0.34

Molecular Weight Matrix	
liquid	mol wt
gas rvp 13	62
gas rvp 10	66
gas rvp 7	68
crude oil	50
JP -4	80
jet kerosene	130
fuel oil 2	130
fuel oil 6	190

Adjusted TVP Matrix	
liquid	TVP value
gas rvp 13	23.7
gas rvp 10	11.2
gas rvp 7	10.7
crude oil	1.20002
JP -4	4.9
jet kerosene	0.0385
fuel oil 2	0.0422
fuel oil 6	0.00016

RVP Matrix	
liquid	RVP value
gas rvp 13	13
gas rvp 10	10
gas rvp 7	7
crude oil	0.250206302
JP -4	2.7
jet kerosene	0.029
fuel oil 2	0.022
fuel oil 6	0.00019

Long-Term  
 VRU\_Eff = 95.00%  
  
 Short-Term  
 VRU\_Eff = 95.00%

**FIXED ROOF TANK CALCULATION (AP-42: Chapter 7 Method)**

Basic Input Data	
liquid {1:G13, 2:G10, 3:G7, 4:C, 5:JP, 6:ker, 7:O2, 8:O6} =	4
liquid TVP =	2.05
if TVP is entered, enter TVP temperature (°F) =	100
tank heated {yes, no} =	no
if tank is heated, enter temp (°F) =	
vapor recovery system present? {yes, no} =	yes
is this a wash tank? {yes, no} =	no
will flashing losses occur in this tank? {yes, no} =	no
breather vent pressure setting range (psi) (def = 0.06):	0.06

Tank Data	
diameter (feet) =	18.8814
capacity (enter barrels in first col, gals will compute) =	500 21,000
conical or dome roof? {c, d} =	c
shell height (feet) =	8
roof height (def = 1):	0
ave liq height (feet):	4
color {1:Spec Al, 2:Dif Al, 3:Lite, 4:Med, 5:Rd, 6:Wh} =	4
condition {1: Good, 2: Poor} =	1

Liquid Data		A	B
maximum daily throughput (bopd) =			100
Ann thruput (gal): (enter value in Column A if not max PTE)			1.533E+06
RVP (psia):			2.04909
*API gravity =			15

Computed Values	
roof outage <sup>1</sup> (feet):	0
vapor space volume <sup>2</sup> (cubic feet):	1,120
turnovers <sup>3</sup> :	73
turnover factor <sup>4</sup> :	0.58
paint factor <sup>5</sup> :	0.68
surface temperatures (°R, °F)	
average <sup>6</sup> :	527.2 67.2
maximum <sup>7</sup> :	539 79
minimum <sup>8</sup> :	515.4 55.4
product factor <sup>9</sup> :	0.75
diurnal vapor ranges	
temperature <sup>10</sup> (fahrenheit degrees):	47.2
vapor pressure <sup>11</sup> (psia):	0.546857
molecular weight <sup>12</sup> (lb/lb-mol):	50
TVP <sup>13</sup> (psia) [adjusted for ave liquid surface temp]:	1.0081
vapor density <sup>14</sup> (lb/cubic foot):	0.00891
vapor expansion factor <sup>15</sup> :	0.125
vapor saturation factor <sup>16</sup> :	0.823915
vented vapor volume (scf/bbl):	8
fraction ROG - flashing losses:	0.308
fraction ROG - evaporative losses:	0.885

Emissions	Uncontrolled ROC emissions			Controlled ROC emissions		
	lb/hr	lb/day	ton/year	lb/hr	lb/day	ton/year
breathing loss <sup>17</sup> =	0.04	0.91	0.17	0.00	0.05	0.01
working loss <sup>18</sup> =	0.08	1.94	0.35	0.00	0.10	0.02
flashing loss <sup>19</sup> =	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS =	0.12	2.85	0.52	0.01	0.14	0.03

Attachment 10.2-2  
 Permit 10258  
 Date: 11/03/09  
 Tank: Baker Tanks (2)  
 Owner: Greka  
 Lease: UCB  
 District: Santa Barbara  
 Version: Tank-2c.xls

Paint Factor Matrix		
paint color	paint condition	
	good	poor
spec alum	0.39	0.49
diff alum	0.60	0.68
lite grey	0.54	0.63
med grey	0.68	0.74
red	0.89	0.91
white	0.17	0.34

Molecular Weight Matrix	
liquid	mol wt
gas rvp 13	62
gas rvp 10	66
gas rvp 7	68
crude oil	50
JP -4	80
jet kerosene	130
fuel oil 2	130
fuel oil 6	190

Adjusted TVP Matrix	
liquid	TVP value
gas rvp 13	7.908
gas rvp 10	5.56
gas rvp 7	3.932
crude oil	1.0081
JP -4	1.516
jet kerosene	0.0103
fuel oil 2	0.009488
fuel oil 6	0.0000472

RVP Matrix	
liquid	RVP value
gas rvp 13	13
gas rvp 10	10
gas rvp 7	7
crude oil	2.049094614
JP -4	2.7
jet kerosene	0.029
fuel oil 2	0.022
fuel oil 6	0.00019

Long-Term  
 VRU\_Eff = 95.00%  
  
 Short-Term  
 VRU\_Eff = 95.00%

## LOADING RACK EMISSION CALCULATION PROGRAM

### ADMINISTRATIVE INFORMATION

Main Loading Rack Attachment 10.2-3  
 Company: Greka  
 Facility: UCB  
 Processed by: JJM  
 Date: 11/3/2009

Reference: Loading Rack

Rack Type: Enter X as Appropriate

	S Factor
Submerged loading of a clean cargo tank	0.50
Submerged loading: Dedicated normal service	<u>  X  </u> 0.60
Submerged loading: Dedicated vapor balance service	1.00
Splash loading of a clean cargo tank	1.45
Splash loading: Dedicated normal service	1.45
Splash loading: Dedicated vapor balance service	1.00

### Input data

Reference

S = Saturation Factor	<u>0.60</u>	See AP-42 Table 4.4-1	2
M = Molecular Weight	<u>50</u>	Crude Oil: Default = 50 lb/lb-mole	3
P = True Vapor Pressure (psia)	<u>1.200</u>	See AP-42 Table 12.3-5	1
T = Liquid Temperature °R	<u>640</u>	<u>180</u> °F + 460 = °R	5
R = Loading Rate (bbl/hr)	<u>160.00</u>	<u>6,720</u> gallons (42 gallons = 1 bbl)	1
C = Storage Capacity (bbl)	<u>2,000</u>	<u>84,000</u> gallons (42 gallons = 1 bbl)	1
A = Annual Production (bbl)	<u>54,750</u>	<u>2,299,500</u> gallons (42 gallons = 1 bbl)	1
eff = Vapor Recovery Efficiency	<u>0.95</u>	Default = 0.95	1
ROC/THC = Reactivity	<u>0.885</u>	Crude Oil: Default = 0.885	

HLPD = hours loading per day = (C/R) if < 24 =

12.50 hours/day

HLPY = hours loading per year = (A/R) =

342.19 hours/year

L<sub>L</sub> = Loading loss (lb/1000 gal) = 12.46 (S)(P)(M)/T =

0.7009 lb/1000 gal

### Total Uncontrolled Hydrocarbon Losses:

#### Hourly

THL<sub>H</sub> = (THL<sub>A</sub>/HLPY) =

4.17 lbs/hr

#### Daily

THL<sub>D</sub> = (THL<sub>H</sub>)(HLPD) =

52.10 lbs/day

#### Annual

THL<sub>A</sub> = (L<sub>L</sub>)(A)(42 gal/bbl)(1 ton/2,000 lbs)(ROC/THC) =

0.71 TPY

### Total Controlled Hydrocarbon Losses:

#### Hourly

THL<sub>H</sub> = (THL<sub>A</sub>/HLPY)(1-eff) =

0.21 lbs/hr

#### Daily

THL<sub>D</sub> = (THL<sub>H</sub>)(HLPD)(1-eff) =

2.61 lbs/day

#### Annual

THL<sub>A</sub> = (L<sub>L</sub>)(A)(42 gal/bbl)(1 ton/2,000 lbs)(1-eff)(ROC/THC) = tons/year =

0.04 TPY

### Path & File Name:

\\sbcapcd.org\shares\Groups\ENGR\W\Oil&Gas\Greka\SOUTH Cat Canyon - Pt70\UCB\Pt70 Renewal-2009\UCB Loading Rack Calcs.xls\LR Main

### Notes:

1. Data provided by the applicant
2. AP-42, (Chapter 5, 5th Edition), Table 5.2-1
3. If not otherwise provided, crude oil is assumed to be 50 lb/lb-mole.
4. If not otherwise provided, vapor pressure is calculated from CARB AB-2588 Guidelines, page 103, eq. 25
5. R is calculated by adding 460 to °F.

Template Revised: September 10, 1997

## LOADING RACK EMISSION CALCULATION PROGRAM

### ADMINISTRATIVE INFORMATION

Baker Tank LR Attachment 10.2-4  
 Company: Greka  
 Facility: UCB  
 Processed by: JJM  
 Date: 11/3/2009

Reference: Loading Rack

Rack Type: Enter X as Appropriate

	S Factor
Submerged loading of a clean cargo tank	0.50
Submerged loading: Dedicated normal service	<u>  X  </u> 0.60
Submerged loading: Dedicated vapor balance service	1.00
Splash loading of a clean cargo tank	1.45
Splash loading: Dedicated normal service	1.45
Splash loading: Dedicated vapor balance service	1.00

### Input data

### Reference

S = Saturation Factor	<u>0.60</u>	See AP-42 Table 4.4-1	2
M = Molecular Weight	<u>50</u>	Crude Oil: Default = 50 lb/lb-mole	3
P = True Vapor Pressure (psia)	<u>2.050</u>	See AP-42 Table 12.3-5	1
T = Liquid Temperature °R	<u>560</u>	<u>100</u> °F + 460 = °R	5
R = Loading Rate (bbl/hr)	<u>160.00</u>	<u>6,720</u> gallons (42 gallons = 1 bbl)	1
C = Storage Capacity (bbl)	<u>500</u>	<u>21,000</u> gallons (42 gallons = 1 bbl)	1
A = Annual Production (bbl)	<u>36,500</u>	<u>1,533,000</u> gallons (42 gallons = 1 bbl)	1
eff = Vapor Recovery Efficiency	<u>0.95</u>	Default = 0.95	1
ROC/THC = Reactivity	<u>0.885</u>	Crude Oil: Default = 0.885	

HLPD = hours loading per day = (C/R) if < 24 =

3.13 hours/day

HLPY = hours loading per year = (A/R) =

228.13 hours/year

$L_L$  = Loading loss (lb/1000 gal) = 12.46 (S)(P)(M)/T =

1.3684 lb/1000 gal

### Total Uncontrolled Hydrocarbon Losses:

#### Hourly

$THL_H = (THL_A / HLPY) =$

8.14 lbs/hr

#### Daily

$THL_D = (THL_H)(HLPD) =$

25.43 lbs/day

#### Annual

$THL_A = (L_L)(A)(42 \text{ gal/bbl})(1 \text{ ton}/2,000 \text{ lbs})(ROC/THC) =$

0.93 TPY

### Total Controlled Hydrocarbon Losses:

#### Hourly

$THL_H = (THL_A / HLPY)(1 - \text{eff}) =$

0.41 lbs/hr

#### Daily

$THL_D = (THL_H)(HLPD)(1 - \text{eff}) =$

1.27 lbs/day

#### Annual

$THL_A = (L_L)(A)(42 \text{ gal/bbl})(1 \text{ ton}/2,000 \text{ lbs})(1 - \text{eff})(ROC/THC) = \text{tons/year} =$

0.05 TPY

Path & File Name:

\\sbcapcd.org\shares\Groups\ENGR\WP\Oil&Gas\Greka\SOUTH Cat Canyon - Pt70\UCB\Pt70 Renewal-2009\UCB Loading Rack Calcs.xls\JR Baker

Notes:

1. Data provided by the applicant
2. AP-42, (Chapter 5, 5th Edition), Table 5.2-1
3. If not otherwise provided, crude oil is assumed to be 50 lb/lb-mole.
4. If not otherwise provided, vapor pressure is calculated from CARB AB-2588 Guidelines, page 103, eq. 25
5. R is calculated by adding 460 to °F.

Template Revised: September 10, 1997



# FUGITIVE HYDROCARBON CALCULATIONS - CARB/KVB METHOD

Page 1 of 2

ADMINISTRATIVE INFORMATION			
Attachment:			
Company:	Greka	Version:	fhc-kvb5.xls
Facility:	UCB Lease	Date:	24-Oct-00
Processed by:	JJM		
Date:	11/24/2009		
Path & File Name:			
\\sbccapcd.org\shares\Groups\ENGR\WPOil&Gas\Greka\SOUTH Cat Canyon - Pt70\UCB\Pt70 Renew al-2009\UCB KVB Calcs.xls\FHC CALC KVB			

Reference: CARB speciation profiles #s 529, 530, 531, 532

<u>Data</u>	<u>Value</u>	<u>Units</u>
Number of Active Wells at Facility	6	wells
Facility Gas Production	not available	scf/day
Facility Dry Oil Production	150	bbbls/day
Facility Gas to Oil Ratio (if > 500 then default to 501)	501	scf/bbl
API Gravity	12	degrees API
Facility Model Number	5	dimensionless
No. of Steam Drive Wells with Control Vents	0	wells
No. of Steam Drive Wells with Uncontrol Vents	0	wells
No. of Cyclic Steam Drive Wells with Control Vents	0	wells
No. of Cyclic Steam Drive Wells with Uncontrol Vents	0	wells
Composite Valve and Fitting Emission Factor	2.8053	lb/day-well

Lease Model	Valve	Fitting	Composite	
	ROG Emission Factor Without Ethane	ROG Emission Factor Without Ethane	ROG Emission Factor Without Ethane	
1	1.4921	0.9947	2.4868	lbs/day-well
2	0.6999	0.6092	1.3091	lbs/day-well
3	0.0217	0.0673	0.0890	lbs/day-well
4	4.5090	2.1319	6.6409	lbs/day-well
5	0.8628	1.9424	2.8053	lbs/day-well
6	1.7079	2.5006	4.2085	lbs/day-well

Model #1: Number of wells on lease is less than 10 and the GOR is less than 500.

Model #2: Number of wells on lease is between 10 and 50 and the GOR is less than 500.

Model #3: Number of wells on lease is greater than 50 and the GOR is less than 500.

Model #4: Number of wells on lease is less than 10 and the GOR is greater than 500.

Model #5: Number of wells on lease is between 10 and 50 and the GOR is greater than 500.

Model #6: Number of wells on lease is greater than 50 and the GOR is greater than 500.

## ROC Emission Calculation Summary Results Table

### Reactive Organic Compounds<sup>(c)</sup>

	lbs/hr	lbs/day	tons/year
Valves and Fittings <sup>(a)</sup>	0.14	3.37	0.61
Sumps, Wastewater Tanks and Well Cellars <sup>(b)</sup>	0.70	16.69	3.05
Oil/Water Separators <sup>(b)</sup>	0.00	0.00	0.00
Pumps/Compressors/Well Heads <sup>(a)</sup>	0.00	0.10	0.02
Enhanced Oil Recovery Fields	0.00	0.00	0.00
<b>Total Facility FHC Emissions (ROC)</b>	<b>0.84</b>	<b>20.16</b>	<b>3.68</b>

a: Emissions amount reflect an 80% reduction due to Rule 331 implementation.

b: Emissions reflect control efficiencies where applicable.

c: Due to rounding, the totals may not appear correct

## Emission Calculation by Emission Unit

**Pumps, Compressors, and Well Heads Uncontrolled Emission Calculations**

Number of Wells	6	wells
Wellhead emissions	0.0582	ROC (lb/well-day)
FHC from Pumps	0.0234	ROC (lb/well-day)
FHC from Compressors	0.4074	ROC (lb/well-day)
Total:	0.4890	ROC (lb/well-day)

**Sumps, Uncovered Wastewater Tanks, and Well Cellars**

Efficiency Factor: (70% for well cellars, 0% for uncovered WW tanks, sumps and pits)

Unit Type/Emissions Factor

	Heavy Oil Service	Light Oil Service	
Primary	0.0941	0.138	(lb ROC/ft <sup>2</sup> -day)
Secondary	0.0126	0.018	(lb ROC/ft <sup>2</sup> -day)
Tertiary	0.0058	0.0087	(lb ROC/ft <sup>2</sup> -day)

**Surface Area and Type (emissions in lbs/day)**

Description/Name	Number	Area (ft <sup>2</sup> )	Primary	Secondary	Tertiary
Well Cellars <sup>(a)</sup>	3	128	3.61		
Wastewater Sump	1	900		11.34	
Wastewater Sump	1	300			1.74

(a) A 70% reduction is applied for implementation of Rule 344 (Sumps, Pits, and Well Cellars).

3.61 11.34 1.74

**Covered Wastewater Tanks**

Efficiency Factor: 85%

**Surface Area and Type (emissions in lbs/day)**

Description/Name	Number	Area (ft <sup>2</sup> )	Primary	Secondary	Tertiary
			0.00		
				0.00	
					0.00
			0.00	0.00	0.00

**Covered Wastewater Tanks Equipped with Vapor Recovery**

Efficiency Factor: 95%

**Surface Area and Type (emissions in lbs/day)**

Description/Name	Number	Area (ft <sup>2</sup> )	Primary	Secondary	Tertiary
			0.00		
				0.00	
					0.00
			0.00	0.00	0.00

**Oil/Water Separators**

Efficiency Factor: varies (85% for cover, 95% for VRS, 0% for open top)

Emissions Factor: 560 (lb ROC/MM Gal)

Description/Name	TP-MM Gal	Type (emissions in lbs/day)			Total lb/day
		Equipped with Cover	Equipped with VRS	Open Top	
		0.0			
			0.0		
				0.0	
		0.0	0.0	0.0	0.0

### **10.3 *Fee Calculations***

Permit fees for the UCB Lease are based on equipment rating, pursuant to APCD Rule 210.I.B.2 and Schedule A.

NOTE: All work performed with respect to implementing the requirements of the Part 70 Operating Permit program, including federal permit processing and federal permit compliance monitoring are assessed on a cost reimbursement basis pursuant to APCD Rule 210.I.C.

**FEE STATEMENT**  
**PT-70/Reeval No. 10258 - R3**  
**FID: 04126 UCB Lease / SSID: 02658**



**Device Fee**

Device No.	Device Name	Fee Schedule	Qty of Fee Units	Fee per Unit	Fee Units	Max or Min. Fee Apply?	Number of Same Devices	Pro Rate Factor	Device Fee	Penalty Fee?	Fee Credit	Total Fee per Device
004076	Crude Oil Shipping Tank	A6	42.000	3.36	Per 1000 gals	No	1	1.000	141.12	0.00	0.00	141.12
004080	Boiler	A3	0.600	440.07	Per 1 million Btu input	No	1	1.000	264.04	0.00	0.00	264.04
004077	Heater Treater	A3	1.500	440.07	Per 1 million Btu input	No	1	1.000	660.11	0.00	0.00	660.11
004078	Test Treater	A3	0.600	440.07	Per 1 million Btu input	No	1	1.000	264.04	0.00	0.00	264.04
004079	Free Water Knockout Vessel - Desander	A3	1.000	440.07	Per 1 million Btu input	No	1	1.000	440.07	0.00	0.00	440.07
005227	Crude Oil Shipping Tank	A6	42.000	3.36	Per 1000 gal	No	1	1.000	141.12	0.00	0.00	141.12
100350	Baker Tank #15	A6	21.000	3.36	Per 1000 gals	No	1	1.000	70.56	0.00	0.00	70.56
100443	Baker Tank #16	A6	21.000	3.36	Per 1000 gals	No	1	1.000	70.56	0.00	0.00	70.56
004088	Oil and Gas Wellheads	A1.a	1.000	58.66	Per equipment	No	6	1.000	351.96	0.00	0.00	351.96
004087	Well Cellars - All	A1.a	1.000	58.66	Per equipment	No	3	1.000	175.98	0.00	0.00	175.98
004083	Valves & Fittings	A1.a	1.000	58.66	Per equipment	No	1	1.000	58.66	0.00	0.00	58.66
004085	Wastewater Sump	A6	60.600	3.36	Per 1000 gal	No	1	1.000	203.62	0.00	0.00	203.62
004086	Wastewater Sump	A6	22.700	3.36	Per 1000 gal	No	1	1.000	76.27	0.00	0.00	76.27
004081	Fuel Gas Scrubber	A6	1.000	3.36	Per 1000 gal	Min	1	1.000	58.28	0.00	0.00	58.28
100445	Skim Pump	A2	10.000	30.41	Per total rated hp	No	1	1.000	304.10	0.00	0.00	304.10
100351	Baker Tank # 15 Loading Rack	A1.a	1.000	58.66	Per equipment	No	1	1.000	58.66	0.00	0.00	58.66
004089	Loading Rack	A1.a	1.000	58.66	Per equipment	No	1	1.000	58.66	0.00	0.00	58.66
100444	Baker Tank #16 Loading Rack	A1.a	1.000	58.66	Per equipment	No	1	1.000	58.66	0.00	0.00	58.66
100446	Vapor Recovery System	A2	15.000	30.41	Per total rated hp	No	1	1.000	456.15	0.00	0.00	456.15
<b>Device Fee Sub-Totals =</b>									<b>\$3,912.62</b>	<b>\$0.00</b>	<b>\$0.00</b>	
<b>Device Fee Total =</b>												<b>\$3,912.62</b>

**Fee Statement Grand Total = \$3,912**

**Notes:**

- (1) Fee Schedule Items are listed in APCD Rule 210, Fee Schedule "A".
- (2) The term "Units" refers to the unit of measure defined in the Fee Schedule.

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## 10.4 IDS Database Emission Tables

**Table 10.4-1 Permitted Potential to Emit (PPTE)**

Facility	Units	NO <sub>x</sub>	ROC	CO	SO <sub>x</sub>	PM	PM10
UCB	lbs/day	<b>8.70</b>	<b>26.52</b>	<b>7.32</b>	<b>12.09</b>	<b>0.67</b>	<b>0.67</b>
	TPY	<b>1.59</b>	<b>4.04</b>	<b>1.34</b>	<b>2.21</b>	<b>0.12</b>	<b>0.12</b>

**Table 10.4-2. Greka South Cat Canyon Stationary Source PTE**

Facility	FID	Units	NO <sub>x</sub>	ROC	CO	SO <sub>x</sub>	PM	PM10
Bell Lease	3211	lbs/day	19.04	232.44	16.03	28.66	1.60	1.60
		TPY	3.47	42.21	2.93	5.23	0.29	0.29
Blockman Lease	3306	lbs/day	0.00	42.99	0.00	0.00	0.00	0.00
		TPY	0.00	7.85	0.00	0.00	0.00	0.00
Dominion Lease	4127	lbs/day	7.74	76.73	5.00	10.72	0.71	0.71
		TPY	1.41	8.16	0.91	1.96	0.13	0.13
ICE Facility	3831	lbs/day	1,166.08	70.58	1,004.02	76.09	6.49	6.49
		TPY	212.81	12.88	178.91	13.89	2.19	2.19
Palmer Stendl Lease	3307	lbs/day	0.00	17.53	0.00	0.00	0.00	0.00
		TPY	0.00	3.20	0.00	0.00	0.00	0.00
UCB Lease	4126	lbs/day	8.70	26.52	7.32	12.09	0.67	0.67
		TPY	1.59	4.04	1.34	2.21	0.12	0.12
TOTALS		lbs/day	<b>1,201.56</b>	<b>466.79</b>	<b>1,032.37</b>	<b>127.56</b>	<b>9.47</b>	<b>9.47</b>
		TPY	<b>219.28</b>	<b>78.34</b>	<b>184.09</b>	<b>23.29</b>	<b>2.73</b>	<b>2.73</b>

Facility	FID	Permits	Units	NOx	ROC	CO	SOx	PM	PM10
Bell Lease	3211	ATC 9146, 9412, and 9387	lbs/hr	0.00	1.44	4.58	0.00	0.00	0.00
			lbs/day	0.00	23.15	109.92	0.00	0.00	0.00
			TPQ	0.00	0.76	4.69	0.00	0.00	0.00
			TPY	0.00	4.22	18.75	0.00	0.00	0.00
Blockman	3306	ATC 9964	lbs/hr	0.00	0.03	0.00	0.00	0.00	0.00
			lbs/day	0.00	0.60	0.00	0.00	0.00	0.00
			TPQ	0.00	0.03	0.00	0.00	0.00	0.00
			TPY	0.00	0.11	0.00	0.00	0.00	0.00
Dominion Lease	4127	ATC 9734 and 9884	lbs/hr	0.25	0.37	0.05	0.34	0.03	0.03
			lbs/day	6.00	8.93	1.30	8.17	0.69	0.69
			TPQ	0.28	0.66	0.06	0.37	0.03	0.03
			TPY	1.10	2.64	0.23	1.49	0.13	0.13
ICE Facility	3831	ATC 9610, 9975, 10133, and 10421	lbs/hr	0.00	0.00	0.00	0.00	0.05	0.05
			lbs/day	0.00	0.00	0.00	0.00	0.95	0.95
			TPQ	0.00	0.00	0.00	0.00	0.05	0.05
			TPY	0.00	0.00	0.00	0.00	0.18	0.18
Palmer Stendel	3307	ATC 9665	lbs/hr	0.00	0.02	0.00	0.00	0.00	0.00
			lbs/day	0.00	0.48	0.00	0.00	0.00	0.00
			TPQ	0.00	0.03	0.00	0.00	0.00	0.00
			TPY	0.00	0.10	0.00	0.00	0.00	0.00
UCB Lease	4126	ATC 10174	lbs/hr	0.00	0.12	0.00	0.00	0.00	0.00
			lbs/day	0.00	2.83	0.00	0.00	0.00	0.00
			TPQ	0.00	0.04	0.00	0.00	0.00	0.00
			TPY	0.00	0.14	0.00	0.00	0.00	0.00
	Source NEI		lbs/hr	0.25	1.97	4.63	0.34	0.08	0.08
			lbs/day	6.00	35.99	111.22	8.17	1.64	1.64
			TPQ	0.28	1.51	4.75	0.37	0.08	0.08
			TPY	1.10	7.21	18.98	1.49	0.31	0.31

## 10.5 Equipment List

Tuesday, November 03, 2009

### Santa Barbara County APCD – Equipment List

PT-70/Reeval 10258 R3 / FID: 04126 UCB Lease / SSID: 02658

#### A PERMITTED EQUIPMENT

##### 1 Crude Oil Shipping Tank

<i>Device ID #</i>	<b>004076</b>	<i>Device Name</i>	<b>Crude Oil Shipping Tank</b>
<i>Rated Heat Input</i>		<i>Physical Size</i>	1000.00 BBL
<i>Manufacturer</i>		<i>Operator ID</i>	9655
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device</i>	Diameter of 21.5 feet, shell height of 16.0 feet and a cone roof height above the shell of 0.7 feet. The tank vents to the vapor recovery system, is heated by the boiler, and is equipped with a pressure-vacuum relief valve with a pressure setting range of 0.11 psig.		
<i>Description</i>			

##### 2 External Combustion Equipment

###### 2.1 Boiler

<i>Device ID #</i>	<b>004080</b>	<i>Device Name</i>	<b>Boiler</b>
<i>Rated Heat Input</i>	0.600 MMBtu/Hour	<i>Physical Size</i>	
<i>Manufacturer</i>	Petrotherm	<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device</i>	field gas fired		
<i>Description</i>			

## 2.2 Heater Treater

<b>Device ID #</b>	<b>004077</b>	<b>Device Name</b>	<b>Heater Treater</b>
<i>Rated Heat Input</i>	1.500 MMBtu/Hour	<i>Physical Size</i>	
<i>Manufacturer</i>	C.E. Natco	<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device Description</i>	Field gas fired. Produced gas is routed to the gas collection system		

## 2.3 Test Treater

<b>Device ID #</b>	<b>004078</b>	<b>Device Name</b>	<b>Test Treater</b>
<i>Rated Heat Input</i>	0.600 MMBtu/Hour	<i>Physical Size</i>	
<i>Manufacturer</i>	National	<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device Description</i>	Field gas fired. Produced gas from heater treater is routed to the gas collection system.		

## 3 Free Water Knockout Vessel - Desander

<b>Device ID #</b>	<b>004079</b>	<b>Device Name</b>	<b>Free Water Knockout Vessel – Desander</b>
<i>Rated Heat Input</i>	1.000 MMBtu/Hour	<i>Physical Size</i>	
<i>Manufacturer</i>		<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device Description</i>	Field gas fired. Produced gas is routed to the gas collection system.		

## 4 Storage Tanks

### 4.1 Crude Oil Shipping Tank

<b>Device ID #</b>	<b>005227</b>	<b>Device Name</b>	<b>Crude Oil Shipping Tank</b>
<i>Rated Heat Input</i>		<i>Physical Size</i>	1000.00 BBL
<i>Manufacturer</i>		<i>Operator ID</i>	9656
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device Description</i>	Diameter of 21.5 feet, shell height of 16.0 feet and a cone roof height above the shell of 0.7 feet. The tank vents to the vapor recovery system, is heated by the boiler, and is equipped with a pressure- vacuum relief valve with a pressure setting range of 0.11 psig.		

### 4.2 Baker Tank #15

<b>Device ID #</b>	<b>100350</b>	<b>Device Name</b>	<b>Baker Tank #15</b>
<i>Rated Heat Input</i>		<i>Physical Size</i>	500.00 BBL
<i>Manufacturer</i>		<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device Description</i>	35' x 8' surface, 8' high. Welded, flat roof, covered, gray, connected to the VRS		

### 4.3 Baker Tank #16

<b>Device ID #</b>	<b>100443</b>	<b>Device Name</b>	<b>Baker Tank #16</b>
<i>Rated Heat Input</i>		<i>Physical Size</i>	500.00 BBL
<i>Manufacturer</i>		<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device Description</i>	35' x 8' surface, 8' high. Welded, flat roof, covered, gray, connected to the VRS		

## 5 O&G Wells, Cellars and Unassociated Valves & Flanges

### 5.1 Oil and Gas Wellheads

<b>Device ID #</b>	<b>004088</b>	<b>Device Name</b>	<b>Oil and Gas Wellheads</b>
<i>Rated Heat Input</i>		<i>Physical Size</i>	6.00 Total Wells
<i>Manufacturer</i>		<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device</i>			
<i>Description</i>			

### 5.2 Well Cellars - All

<b>Device ID #</b>	<b>004087</b>	<b>Device Name</b>	<b>Well Cellars – All</b>
<i>Rated Heat Input</i>		<i>Physical Size</i>	128.80 Square Feet Cellar Area
<i>Manufacturer</i>		<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device</i>	Six oil and gas wells, three equipped with a well cellar (one 6' dia. and		
<i>Description</i>	two 8' dia.)		

### 5.3 Valves & Fittings

<b>Device ID #</b>	<b>004083</b>	<b>Device Name</b>	<b>Valves &amp; Fittings</b>
<i>Rated Heat Input</i>		<i>Physical Size</i>	6.00 Active Wells
<i>Manufacturer</i>		<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device</i>			
<i>Description</i>			

## 6 Wastewater Sump

<i>Device ID #</i>	004085	<i>Device Name</i>	Wastewater Sump
<i>Rated Heat Input</i>		<i>Physical Size</i>	900.00 Square Feet Sump Area
<i>Manufacturer</i>		<i>Operator ID</i>	1
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device Description</i>	open top, 1,444 barrels capacity, with a width of 20 feet, length of 45 feet, and a depth of 6 feet, receiving fluids that have undergone at least one stage of separation (e.g., secondary service).		

## 7 Wastewater Sump

<i>Device ID #</i>	004086	<i>Device Name</i>	Wastewater Sump
<i>Rated Heat Input</i>		<i>Physical Size</i>	300.00 Square Feet Sump Area
<i>Manufacturer</i>		<i>Operator ID</i>	2
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device Description</i>	open top, 541 barrels capacity, with a width of 15 feet, length of 20 feet, and a depth of 8 feet, tertiary service		

## 8 Fuel Gas Scrubber

<i>Device ID #</i>	004081	<i>Device Name</i>	Fuel Gas Scrubber
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>		<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device Description</i>	having a diameter of 50 inches and a length of 15 feet, connected to gas collection system		

## 9 Skim Pump

<b>Device ID #</b>	<b>100445</b>	<b>Device Name</b>	<b>Skim Pump</b>
<i>Rated Heat Input</i>		<i>Physical Size</i>	10.00 Horsepower (Electric Motor)
<i>Manufacturer</i>		<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device</i>	driven by a 10 horsepower electric motor		
<i>Description</i>			

## 10 Loading Racks

### 10.1 Baker Tank # 15 Loading Rack

<b>Device ID #</b>	<b>100351</b>	<b>Device Name</b>	<b>Baker Tank # 15 Loading Rack</b>
<i>Rated Heat Input</i>		<i>Physical Size</i>	500.00 BBL/Day
<i>Manufacturer</i>		<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device</i>	single nozzle, associated with the Baker tank ID# 15.		
<i>Description</i>			

### 10.2 Loading Rack

<b>Device ID #</b>	<b>004089</b>	<b>Device Name</b>	<b>Loading Rack</b>
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>		<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device</i>	This grade level rack equipped with one (1) loading nozzle, for loading		
<i>Description</i>	crude into highway tanker trucks by gravity feed, connected to vapor recovery system		

### 10.3 Baker Tank #16 Loading Rack

<i>Device ID #</i>	100444	<i>Device Name</i>	Baker Tank #16 Loading Rack
<i>Rated Heat Input</i>		<i>Physical Size</i>	500.00 BBL
<i>Manufacturer</i>		<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device</i>	Single nozzle, associated with the Baker tank ID# 16.		
<i>Description</i>			

### 11 Vapor Recovery System

<i>Device ID #</i>	100446	<i>Device Name</i>	Vapor Recovery System
<i>Rated Heat Input</i>		<i>Physical Size</i>	
<i>Manufacturer</i>	Blackmer	<i>Operator ID</i>	
<i>Model</i>	LB361	<i>Serial Number</i>	021605-1
<i>Location Note</i>			
<i>Device</i>	Vapor recovered by a compressor servicing the crude storage tanks and loading rack with an emission reduction efficiency of 95% ROC by weight.		
<i>Description</i>			

## **10.6 Well List**

Attachment 10.6. Permitted Wells.

<u>Operator Name</u>	<u>Field Name</u>	<u>Lease</u>	<u>Well #</u>	<u>API</u>	<u>Well Stat</u>	<u>Pool</u>	<u>Well Type</u>	<u>PWT Stat</u>	<u>S</u>	<u>T</u>	<u>R</u>	<u>B M</u>	<u>Area</u>	<u>Area Name</u>	<u>NEI</u>
Greka Oil & Gas, Inc.	Cat Canyon	U.C.B.	0-18	<a href="#">08300012</a>	Idle	00	OG	Idle	23	9N	33W	SB	21	West Area	No
Greka Oil & Gas, Inc.	Cat Canyon	U.C.B.	0-23	<a href="#">08300137</a>	Idle	00	OG	Idle	23	9N	33W	SB	21	West Area	No
Greka Oil & Gas, Inc.	Cat Canyon	U.C.B.	0-11	<a href="#">08300434</a>	Idle	00	OG	Idle	23	9N	33W	SB	21	West Area	No
Greka Oil & Gas, Inc.	Cat Canyon	U.C.B.	0-12	<a href="#">08300435</a>	Idle	00	OG	Idle	23	9N	33W	SB	21	West Area	No
Greka Oil & Gas, Inc.	Cat Canyon	U.C.B.	1	<a href="#">08320646</a>	Active	00	OG	Active	23	9N	33W	SB	21	West Area	No
Greka Oil & Gas, Inc.	Cat Canyon	U.C.B.	0-9	<a href="#">08321050</a>	Idle	00	OG	Idle	23	9N	33W	SB	21	West Area	No

1. This table represents the number of active and idle oil and gas wells at this facility as reported by the DOGGR.
2. Section (S), Township (T) and Range, (R) is a surveyed rectangular land grid system that covers most of the United States. A township is the measure of units north or south of a baseline, the horizontal line where the survey began. A Range is the measure of units east or west of a meridian, the vertical line where the survey began. Each Township/Range is thirty-six square miles, measuring 6 miles by 6 miles, and contains 36 one-mile square sections. In California, there are three base and meridians, Humboldt, Mount Diablo, and San Bernardino.

